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PWA and WPA—Present and Future

WHEN destructive critics of the Federal relief program foregather at the club or in the Pullman smoker, the alleged waste of untold millions in "boondoggling" is an increasingly popular subject of conversation. Ardent patriots who would have every school teacher sign an oath of allegiance to the Government of the United States, appear to take great joy in alleging the gross and incurable incompetence of that Government and of the democracy on which it is founded.

With figures now available as to the apportionment of the billions voted by Congress in the Emergency Relief Appropriation Act of 1935, the time has come, THE AMERICAN CITY believes, for an appraisal by municipal officials and civic organizations of what is actually being done with the money. At the National Municipal League's forty-first annual conference on government, held in Providence November 25-26, Corrington Gill, Assistant Administrator of the WPA, gave an approximate accounting of how the $4,880,000,000 fund has been allocated.

Amounts allocated for *direct* relief have resulted in a reduction of the amount for *work* relief to about $3,700,000,000. Out of this sum about $1,140,000,000 has been allocated to WPA; $335,000,000 to non-Federal PWA projects; $100,000,000 to low-cost housing; $500,000,000 to highways and grade-crossing elimination; $600,000,000 to the CCC; $247,000,000 to the Resettlement Administration; $131,000,000 to river and harbor improvements; and most of the rest to a wide variety of emergency public works and other activities conducted by the various Federal departments and agencies.

Speaking particularly for the Works Progress Administration, Mr. Gill told the conference that approval has been given by the WPA to about 200,000 local projects, from which the State Administrators have the responsibility of selecting those combining, in their judgment, real public benefits with a maximum of needed local employment. Fifty thousand or more of these projects were reported as actually under way up to November 25, the approximate division being: streets and highways, 41%; public buildings, 10%; parks and playgrounds, 10%; sewage disposal and water supply, 9%; flood control and conservation, 6%; sanitation and health, 5%; airports, 3%; professional and clerical activities, 8%; and other miscellaneous, 8%.

No individual in the United States, if he had the final authority, would distribute the Federal relief funds exactly as listed above. Many, including the editors of THE AMERICAN CITY, would have preferred much larger allocations to non-Federal PWA projects and to low-cost housing than was actually made. But candor compels us to assign only part of the responsibility to the President and the Administration. It is true that the inevitable delays in forcing thousands of projects through the bottle-necks of Administrative and Presidential approval in Washington, prevented action on many a worth-while plan. But many another plan failed of final allotment because of excessive land costs or of the inability of local officials to assure the appropriations or bond issues on which PWA grants were conditioned.

Few readers of this magazine will question, we are sure, the general worthwhileness of local projects recently constructed with Federal aid, such as are pictured or described on pages 40-45, 50, 54, 59, 63 and 64 of this issue; nor of aids to state and local planning as mentioned on pages 51, 61, 62 and 65.

To the President and Congress, in appropriating and apportioning unemployment relief funds for the fiscal year 1936, THE AMERICAN CITY respectfully urges:

1. That action be taken very early in the coming session, so that Federal, state and local governmental agencies may have as much time as possible to perfect plans for prompt and efficient use of such funds as may be made available.

2. That the appropriation be large enough to assure the nearest possible approach to full-time jobs in useful public works and services for all employables to whom private industry and local governments cannot otherwise offer reasonably steady work at a living wage; thus further stimulating the trend towards a high level of prosperity which has already been greatly aided by the spending program of the Federal Government.

3. That the "dole" be thus made as rapidly as may be a thing of the past, except for the indigent unemployables, for whose humanitarian care the state and local governments might then be made mainly, if not wholly, responsible.

4. That to accomplish these purposes the total Federal emergency appropriation for the fiscal year 1936 be not less than $5,000,000,000; and that of this amount there be apportioned on a population basis 25 per cent to state and 25 per cent to local governments. This would be equivalent to a per annum per capita allotment of about $10 each for the states and their subdivisions to be expended beginning July 1, 1936, for public works, services and equipment; such expenditures to be in addition to normal budget expenditures, and subject to approval by the respective State Planning Boards rather than by the PWA or WPA in Washington.

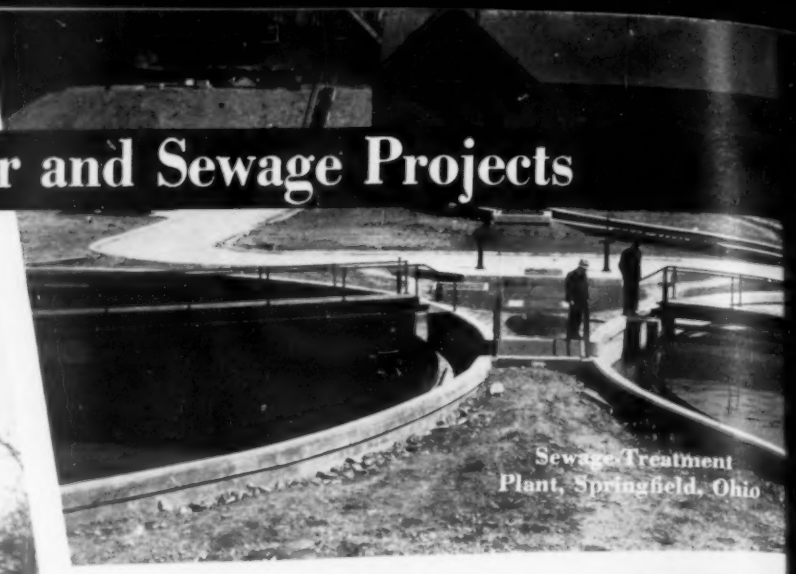
5. That, of the 50 per cent for which Federal agencies would be responsible, a substantial sum be earmarked for aid, under proper restrictions, to large-scale low-rent housing projects, with or without slum clearance, as local needs and conditions may warrant.

6. That Congress stipulate that in the expenditure of public works funds preference be given, not as heretofore under the WPA to the maximum of employment directly on the job; but that modern machinery and labor-saving devices and the facilities of efficient contracting organizations be used wherever practicable, thus stimulating more widespread employment in the construction and durable goods industries.

With more than 9,000,000 workers still looking unsuccessfully for jobs in their normal occupations (9,196,000 on October 1, according to the estimate of the National Industrial Conference Board) the futility of expecting private industry or local governments to solve the problem during the coming fiscal year, without substantial Federal aid, is all too obvious.

PWA Water and Sewage Projects

Water-Main Extensions, La Porte, Ind.

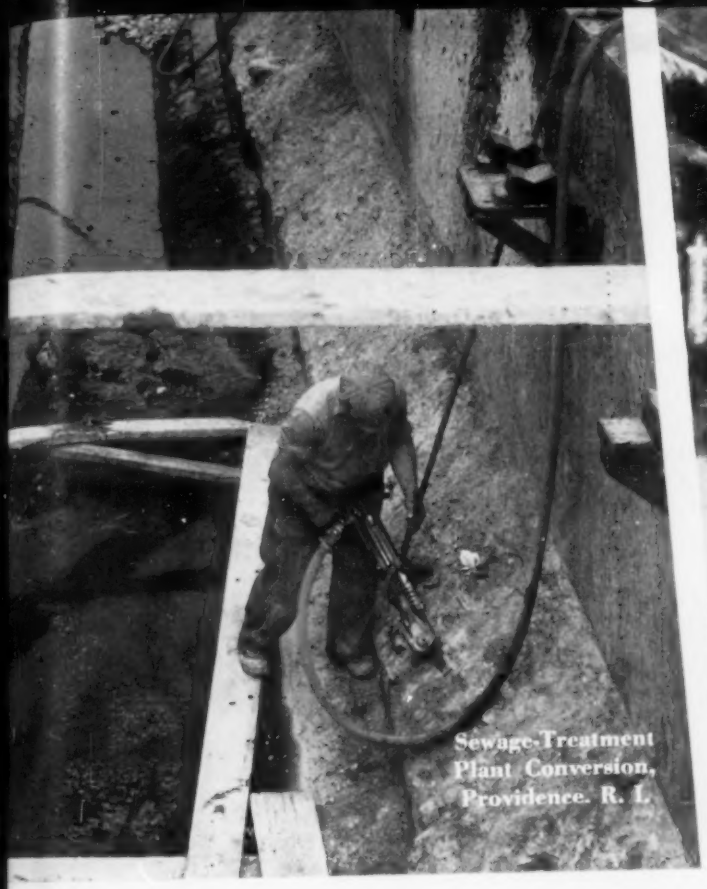


Sewage-Treatment Plant, Springfield, Ohio

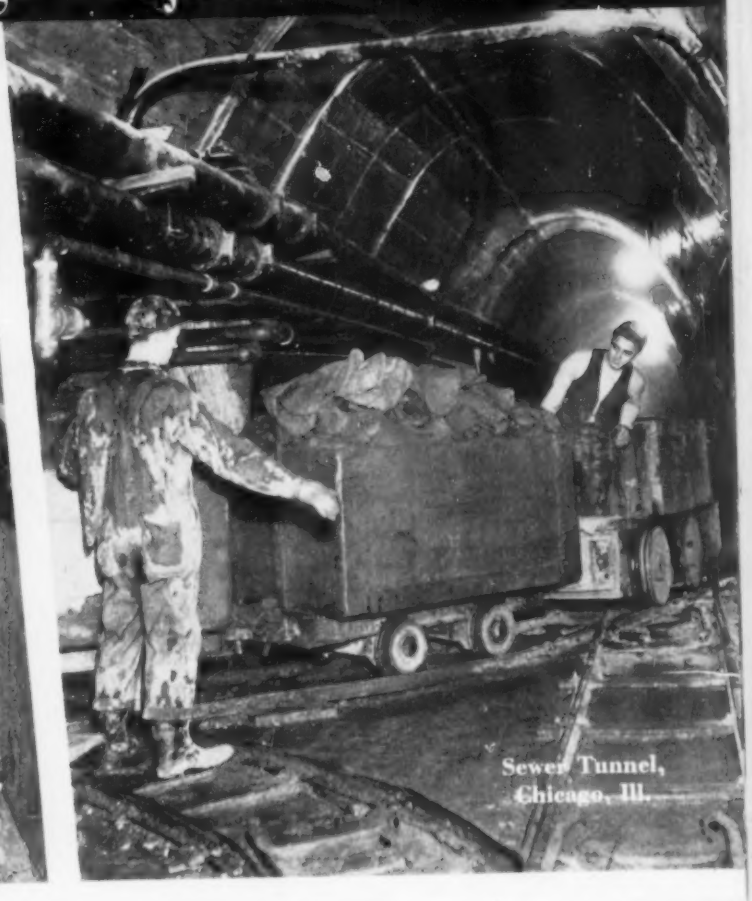
Complete Water-Supply Project, Cleveland, Okla.

Modern Water-Filtration Plant at Rocky Mount, N.

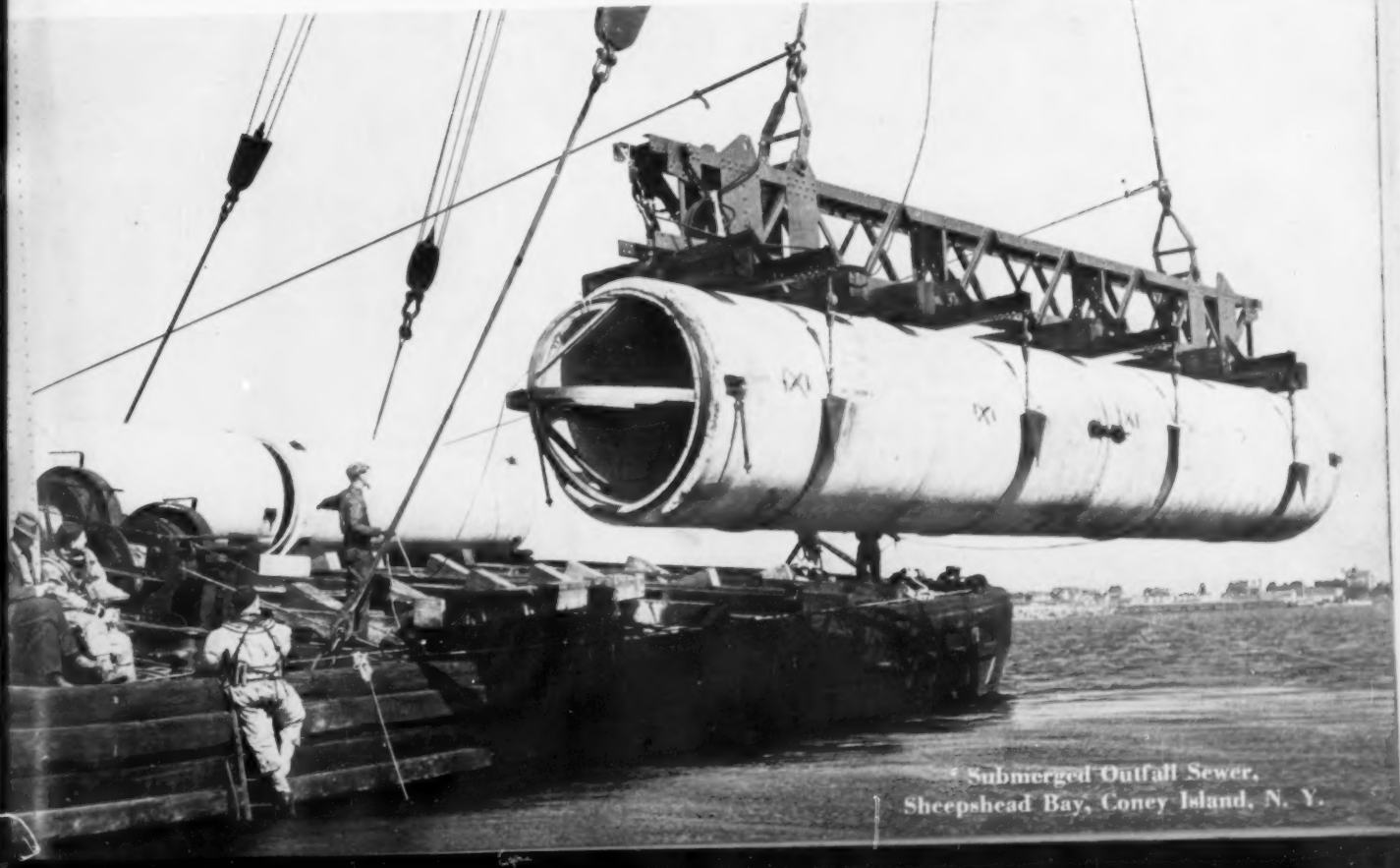
PWA Sewage Projects



Sewage Treatment Plant Conversion, Providence, R. I.

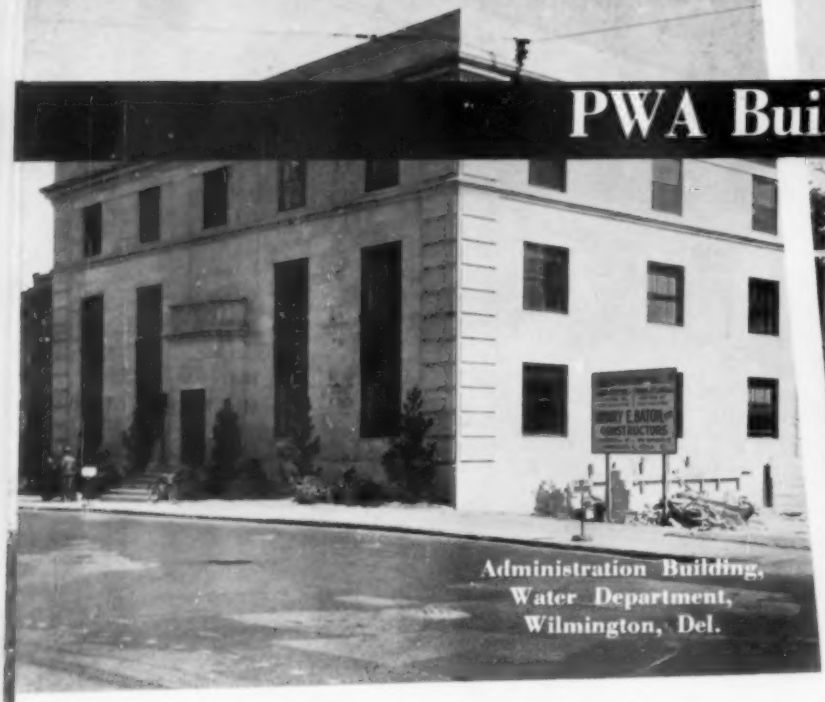


Sewer Tunnel, Chicago, Ill.

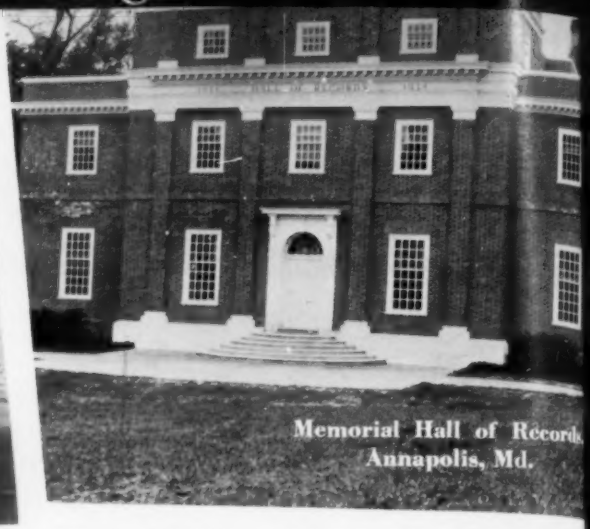


Submerged Outfall Sewer, Sheepshead Bay, Coney Island, N. Y.

PWA Buildings



Administration Building,
Water Department,
Wilmington, Del.



Memorial Hall of Records
Annapolis, Md.

Modern Hospital, Florence,
S. C.
(Old Hospital at the Right)

Addition to Fulton County
Jail Building, Atlanta, Ga.

WPA Street and Sewer Projects

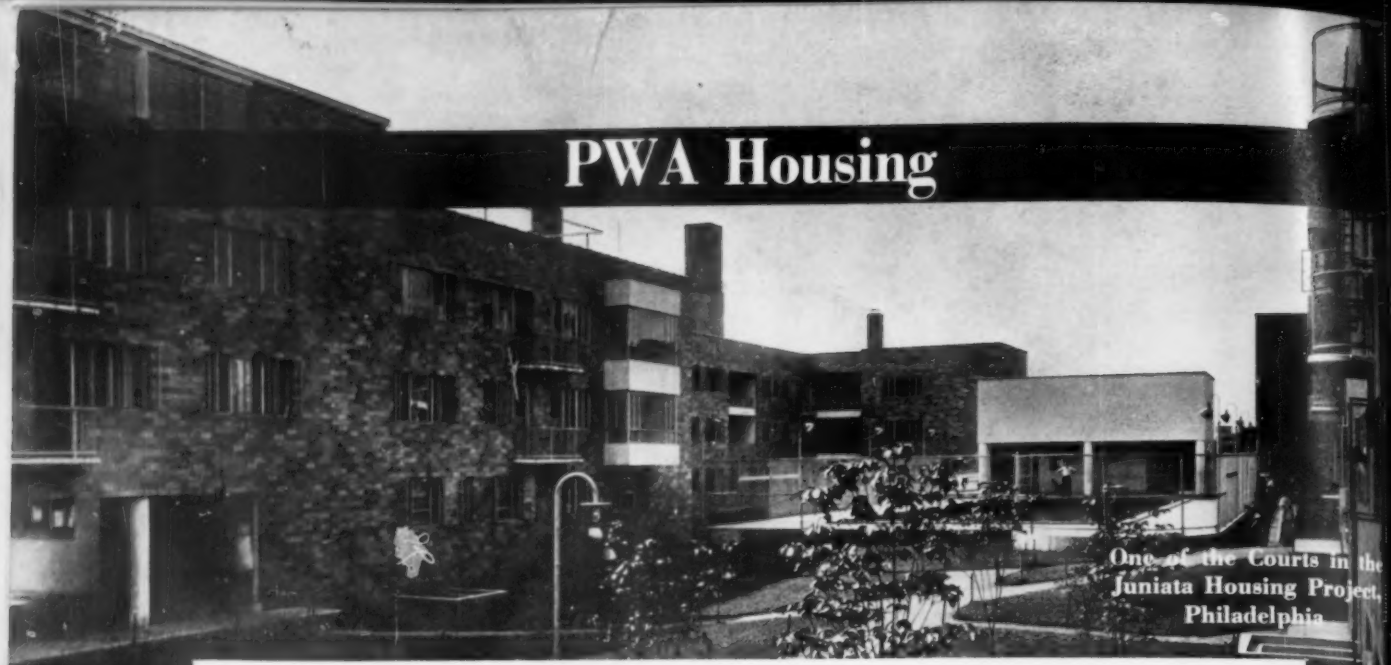
Repairing Michigan Avenue Bridge, Lansing, Mich.

Storm Sewer, Upper Arlington, Ohio

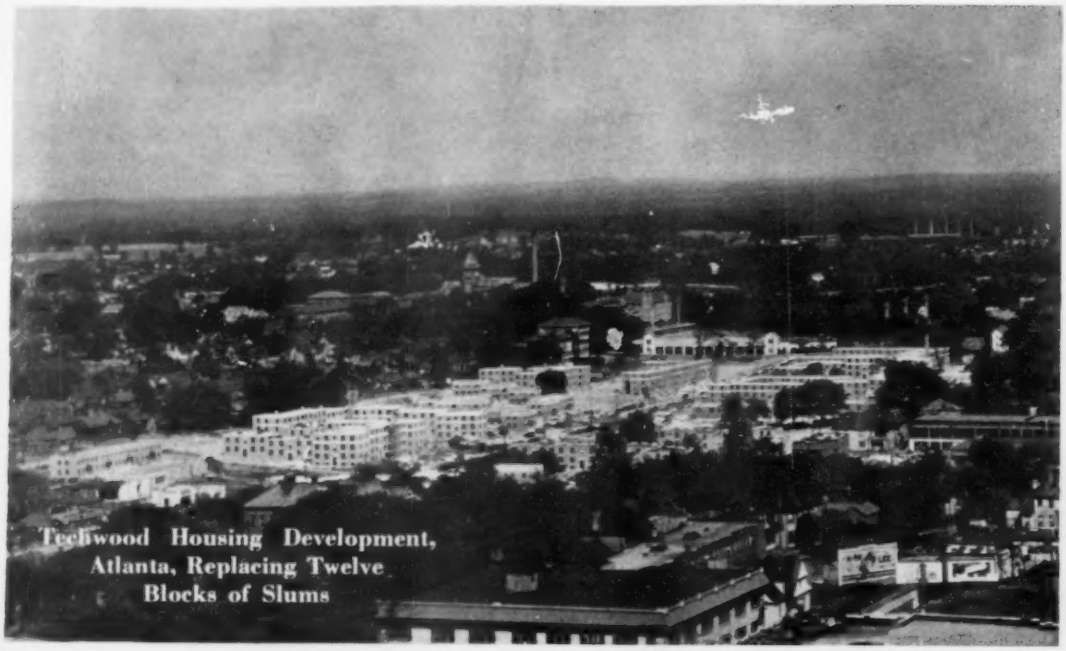
Curb and Gutter Work in Afton, Wyoming

Track Removal and Repaving in Detroit, Mich.

PWA Housing



One of the Courts in the Juniata Housing Project, Philadelphia



Techwood Housing Development, Atlanta, Replacing Twelve Blocks of Slums

Hillside Housing Project in The Borough of the Bronx, New York City

Schools and Parks

PWA Aided in Financing the Addition to This High School [illegible]

Relief Labor Substituted This Park for Shacks and Weeds in the "Front Yard" of Alabama's State Capitol at Montgomery

Low-Cost Bituminous Paving

By GEORGE H. SANDENBURGH
City Engineer, Ann Arbor, Mich.

OUR construction of low-cost bituminous pavements was begun on a large scale in 1931, after an experimental project laid in 1927 had proved successful. All except two of the projects built in 1931 were surface treatments; the other two were the road-mix type. Since 1931, all projects have been the road-mix type. These pavements have proved to be very popular with the residents of the city, as shown by the amount of work petitioned for by property owners. The yardage built in each of these years in Ann Arbor is as follows:

Year	Sq. Yds.	Cost	No. of Districts
1931	151,561	$27,575,12	43
1932	174,154	45,280.04	60
1933	79,855	20,019.81	24
1934	37,345	9,684.01	14
1935	58,982	Est. 16,184.78	Est. 30
Total	501,997	$118,743,76	171

The change from surface treatment to road-mix was made because the road-mix gives a better job and does not cost any more in a city. This is not true where the dust swept from the surface-treated type does not have to be picked up. The cost of picking up dust amounts to as much as the cost of mixing.

The first year this work was begun, we did not know what the costs were going to be, and no new materials were added to the street, but after the costs on the first year's work were obtained, they were found to be so reasonable that we could improve our methods and still get a very low cost pavement.

Methods of Construction

Practically all streets paved have been previously graveled. One inch to 1½ inches of stone passing a 1-inch screen is added to the street. The street is then scarified to a depth of approximately one inch to provide fines. Bituminous material is then applied by means of a pressure distributor in an amount of ½-gallon per square yard, and the stone, sand, and bituminous material are mixed by means of a one-man power grader until a mass of uniform color is obtained. From four to eight turnings are required. When thoroughly mixed, the material is leveled off and a second application of 3/10-gallon of bituminous material per square yard is applied and the whole mass again thoroughly mixed by turning with the power graders. When thoroughly mixed, the mixture is leveled off to the contour of the street, rolled with a 5-ton roller, and the street opened to traffic. The surface is allowed to cure for several weeks, after which a seal coat of 1/3-gallon of bituminous material per square yard is added, and covered with pea pebbles in an amount of 16 to 18 pounds per square yard. The next year a second seal coat is applied, it being the same as the first year's seal coat.

Our equipment consists of two Austin one-man power graders; one 1,000-gallon South Bend motor-drawn pressure bituminous distributor; one 5-ton three-wheeled roller; four 2-yard trucks; two 10,000-gallon storage tanks with heating equipment; and one homemade drag.

Bituminous material used for mixing and the first year's seal coat is tar, meeting Michigan State Highway Specifications TM-2; for the second year's seal coat, either tar TH-1 or asphalt RC-3 is used.

Stone specifications:	
Passing 1-inch screen	100%
Passing ½-inch sieve	25 to 60%
Passing ¼-inch sieve, not more than	10%
Pea pebble specifications:	
Passing ½-inch sieve	100%
Passing ⅜-inch sieve	70 to 85%
Passing ¼-inch sieve	20 to 35%
Passing No. 8 sieve, not more than	3%

Costs

Tar per gallon	$.0945
Pea pebbles per cubic yard	1.10
Stone	1.10

The cost per square yard for low-cost bituminous pavement is itemized as follows:

Tar	.10654
Pebbles and gravel	.02893
Pea pebbles	.00644
Miscellaneous	.0022
Labor	.03161
Equipment rental	.01978
Engineering and supervision (3%)	.00551
Total cost per square yard	.20101

Cost of second year's seal coat:

Tar	.0328
Pea pebbles	.0079
Miscellaneous	.0001
Labor	.0075
Equipment rental	.0026
Engineering and supervision	.0030
Total	.0539

The total cost of the low-cost bituminous pavement per square yard is $.20101 plus $.0539, which equals $.25491.

We are very well satisfied with the service these pavements are giving, and from our experience with their wearing qualities, it appears that they will have a life of at least ten years.

The cost of dirt street maintenance has dropped from $23,706.63 in 1929 to $3,680.24 in 1934, and during this period, the cost of low-cost pavement maintenance has been only $6,598.64.

These low-cost pavements are built on petition of property owners owning a majority of the frontage on the street petitioning. The city at large pays the entire cost of street intersections and 20 per cent of the property frontage. Property owners are given three years to pay their portion of the cost.

There are 72 miles of street in the city. Thirty-seven miles are paved with hard-surface pavements; 28 miles are paved with low-cost bituminous pavements, which leaves 7 miles of gravel streets.

These low-cost pavements have reduced our dirt street maintenance costs, given dustless streets in dry weather, and dry streets in wet weather. It is impossible to estimate the value they have been and are to the health and comfort of our citizens, by the elimination of the dust nuisance. The cost of all these benefits is slightly under 26 cents per square yard of street surface.

Water Supply as the Basis of Fire Protection

By W. R. LaDUE
Chief Engineer, Acting Superintendent, Water Works, Akron, Ohio

AS an army depends upon ammunition, so does the Fire Department depend upon water for its fire-fighting effectiveness. How often do we read in the press, when a suburban home has burned to the ground, that the Fire Department was hampered or made practically helpless through lack of mains in the street from which water could be obtained. Fire chiefs understand the dependence of their department upon water supply and fully appreciate its value and effectiveness in fire emergencies.

Perhaps water supply in fire-fighting is overlooked because there is no glamor in its furnishing and no fire gongs or sirens connected with its arrival at the scene of the fire. The Fire Department arrives, the hose is connected to the hydrant, and the hydrant is turned on, in full assurance tht an ample supply of water will be immediately available; in other words, water is already at the site of the fire waiting for the firemen to arrive and put it to use. It is not withdrawn until the last spark is extinguished.

The Manual of Water Works Practices of the American Water Works Association says:

"The most important functions of public water supplies are to furnish a good, potable water . . . . and an adequate quantity of water under reasonable pressure for putting out fires. The latter is generally characterized as 'fire protection service,' the more important being the public service, rendered through the agency of hydrants or other fire connections upon the distribution system; the less general, though important, the private service rendered through the agency of hydrants and connections to sprinkler systems of manufacturing and other establishments."

Concerns availing themselves of this service secure reduced insurance premiums which offset the cost of installation and provide reasonable certainty against large losses.

Water Works Unsung

"The part played in the extinguishing of fires by the Water Department is all too often overlooked and generally goes unnoticed; yet a little contemplation of the subject will convince you that after all you cannot accomplish much in fire extinguishment without water and plenty of it."

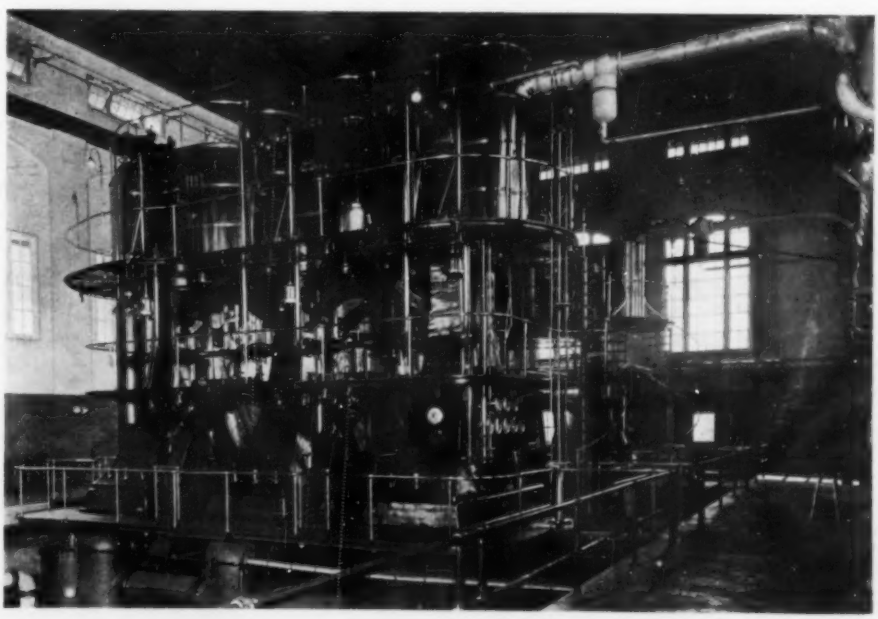
—W. C. MABEE, Chief Engineer, Indianapolis Water Company, in the *Journal of the American Water Works Association*, June, 1934.

Grading for Fire Insurance

The National Board of Fire Underwriters inspects, investigates and grades fire-fighting facilities of cities in order that an equitable rate of fire insurance may be applied. Fire insurance rates are based upon the fire protection and defenses afforded in each individual city and are by no means the same in cities of equal size. The actual inspection of a city is carried on by a Committee of Fire Prevention and Engineering Standards of this National Board of Fire Underwriters. A report is published after inspections, which occur at intervals of five or six years, and is available to members of the Association and insurance companies to form a basis for the grading of the city and the establishment of rates. In a grading schedule of 5,000 points, water supply accounts for 1,700, or about one-third.

Akron Meets All Tests

It is significant to note that the first item in these reports, listed under fire-fighting facilities, is a report on water supply. The standards are high, yet in fire-flow tests, the



INTERIOR OF THE MAIN PUMPING STATION OF THE AKRON, OHIO, WATER SUPPLY, LOCATED NEAR KENT, OHIO

In the foreground is shown the 18-mgd vertical triple expansion pumping engine. The total pumping station capacity at this site is 50-mgd, or about twice what the average daily pumping was in 1934

TEST OF AN AKRON FIRE DEPARTMENT ENGINE

The nozzle is throwing a stream of water 408 feet with 225 pounds pressure at the pump with four 3-inch hose lines siamesed. Water pressure at the hydrant at this locality at the time of this test was 120 pounds per square inch

water-supply system of Akron, Ohio, was able to equal or exceed the amounts required. An example is afforded in the following locations in the congested value districts of Akron:

	Quantities in Gallons Per Minute Available from City System			
Location	Required By N.B.F.U.	Engine Supply	Hydrant Streams	Excess Over Requirements
Main and Market Streets	12,000	22,000	9,700	10,000
Main and Bowery Streets	12,000	16,500	7,200	4,500
Main and Exchange Streets	12,000	22,800	9,400	10,800

The designs and costs of structures for the storage, pumping and distribution of water are decidedly influenced by the demands of fire-protection standards, if low insurance rates are to be secured. The cost of any water supply system, therefore, is greatly increased by its fire-protection provisions. For instance, the National Board of Fire Underwriters' requirements for fire hydrants are as follows:

District	Hydrant Spacing	Sq. Ft. of Area Served
Congested	250 feet	40,000
Industrial	300 "	60,000
Residential	350 "	105,000

In order to secure a distribution of hydrants approaching the above standard, the city of Akron, out of water-works funds, has installed about 5,200 hydrants. Valuable inspections and minor repairs are made by the Fire Department. Major repairs and parts are furnished by water-works facilities and funds.

Water Rates—Not Taxes—Pay for Water for Fire Protection

Fire-protection service afforded by the water works is not paid for by taxes, but by funds supplied by the water consumers. It is interesting to note that when the water-supply system of Akron was operated under private ownership, the city was billed and payment was made out of tax funds at the rate of $40 per year for each hydrant. If today's system were privately owned, it is estimated that in excess of $200,000 would be paid annually out of taxes for fire protection—a sum greater than the amount which could reasonably be expected through taxation of the properties of the private corporation. This tax money, furthermore, the city would have to share proportionately with county and school subdivisions.

Slum Reclamation and the Provision of Low-Cost Housing

By **JOHN IHLDER**
Washington, D. C.

SLUM reclamation and the provision of low-cost housing are two distinct things which may or may not involve an identical site:

1. Slum reclamation involves changing the use of an area so that it will be converted from a community liability to a community asset. Its new use should be the one that will be most beneficial to the neighborhood and to the community as a whole. This may be commercial, industrial, recreational —or residential. If residential, it may be either high-cost or low-cost.

2. Provision of low-cost housing involves securing low-cost sites that are accessible to employment. Such sites *may* or *may not* be those of former slums.

It is to be remembered that a housing program for any community must include three forms of activity:

(a) Demolition of unfit dwellings. Unfit dwellings are likely to be occupied as long as they stand. They are unfair competitors of fit dwellings. Therefore, slum reclamation is an essential part of a housing program. Along with slum reclamation goes demolition, under the police power, of individual buildings that are structurally unsafe or that are so insanitary as to be unfit for human habitation.

(b) Repair and proper maintenance of dwellings that are fit or are worth making fit for habitation, unless repair would impede the clearance and reclamation of a slum or blighted area in which such dwellings happen to be located.

(c) Erection of new dwellings to prevent a housing shortage, and to assure good housing for all economic groups. These new dwellings should be so distributed as to location, type (one-family, multi-family), size and cost, as to meet the needs of the community.

The Patent Situation in Sewage Treatment

By PAUL HANSEN
Greeley and Hansen, Chicago

THIS is written from the point of view of a practicing engineer who has no personal interest in any patents relating to sewage treatment but who is called upon by clients to design sewage-treatment plants that may embody patented devices and processes. From such a point of view, patents may be divided into seven classes:

1. Patents that are valid and useful and for which a reasonable royalty is charged
2. Patents that are valid and useful but for which an unreasonable royalty is demanded
3. Patents that are unexpectedly obtained and unexpectedly affirmed by the courts
4. Patents of doubtful validity but useful, for which a small royalty is demanded
5. Patents of doubtful validity but useful, for which a large royalty is demanded
6. Patents on which royalties are covered in the price of equipment
7. Patents on which royalties are not covered in the price of equipment

Valid and Useful Patents with Reasonable Royalties

The first group of patents causes the practicing engineer very little trouble. By "reasonable royalty" is meant one which does not seriously affect the relative economy of a device or process as compared with an alternate possibility of the same or nearly the same suitability. A typical instance of this is the patent on the Imhoff tank. The royalty demanded was reasonable and easily applied. The novelty of the device was such as to raise little question in the minds of most engineers as to the validity of the patent.

Valid and Useful Patents with Unreasonable Royalties

The second group causes little trouble, provided it is known in advance of design that the patents are valid either as a result of common acceptance of their validity or by affirmation of the courts. There are in most cases enough processes and devices to choose from, so that a sewage-treatment problem may be reasonably and economically met by using other processes and devices which do not infringe any existing patents or on which royalties are reasonable. This very situation tends to prevent a demand for excessive royalties.

Patents Unexpectedly Obtained and Affirmed by Courts

The third class is the most troublesome, especially when accompanied by demands for unreasonable royalties. Most engineers having to do with sewage disposal are familiar with the unexpected affirmation of certain claims of the septic process patents in the Saratoga Springs case and the subsequent attempts of the owners of these patents to collect unreasonable royalties, principally from small towns. To defend themselves against the claims of the owners of the septic process patents, engineers and municipalities formed an "Association for the Defence of Septic Process Suits." It would have been quite possible to avoid or circumvent the septic process patents. Many well-informed engineers were never convinced of the value of the septic-tank process, and subsequent inquiry, stimulated largely by the experiments at Columbus, Ohio, in 1904, has shown that the septic-tank process has such great limitations for large-scale use that septic tanks are now obsolete in municipal practice.

A more recent example is the affirmation of the validity of the activated sludge processes by the U. S. District Court of Milwaukee. While the validity of the patents has been in part upheld by the U. S. District Court of Appeals, there has been no accounting nor collection of any royalties. A number of cities which have been sued have settled out of court. Activated sludge is a useful process of increasing economy by reason of refinement and improvements made by engineers generally, and it has a wide field of applicability. Most of the early patents have expired or are about to expire in November. Hence the use of the process is not likely in the near future to be restricted by patent royalties.

Patents of Doubtful Validity Involving But Small Royalties

There are some patented processes or devices of doubtful validity. If royalties are small or are unobtrusively covered up in the sales price of equipment, engineers are not likely to make much effort to avoid them, especially when the patent rights do not act to seriously restrict competition.

Patents of Doubtful Validity Involving Large Royalties

The fifth class is fortunately not large, and in most cases the patent claims can be circumvented. Where it is desirable to use a process covered by such patents, the engineer should inform his clients as fully as possible regarding the situation and carefully weigh with them the relative merits of paying the royalties asked or challenging the validity of the patents in court. In important cases the cost of litigation may be shared by a group of cities, as was done in combating the septic-process suits.

Patent Royalties Covered in Price of Equipment

The sixth group is a large one and may include the other groups, and it is ignored by engineers much more than it should be. The engineer often authorizes payment for these royalties but is not aware of it. He generally does not know what patents are involved nor the amount of the royalties. Such royalties as may be involved are taken care of in the specifications by a requirement that the contractor shall save the client harmless from all claims of patent infringement.

The manufacturer, on the other hand, is much concerned with patents which affect apparatus manufactured by him. If the patents are his own or if he has exclusive control of them, he is apt to feel righteously entitled to the benefits of such patents. If he is constrained to pay, to competitors, patent royalties on some feature of his

manufactured articles, he is apt to regard such patents as "nuisance" patents or, to use a harsher phrase, "stick-up" patents. If the royalties demanded are relatively small, the manufacturer may find it cheaper to pay them than to challenge the validity of the patents in the courts. If, however, the royalties are relatively large and the validity of the patent is questionable, it may prove worth while to resort to litigation. But such litigation is very expensive.

In the United States, obtaining a patent is a relatively easy matter. This is due in part to the persistence of an old but now outworn national policy of encouraging invention as a means of building up industry. No doubt this policy did stimulate industry in the early days, but nowadays it tends to retard industry, primarily because industry must carry a large burden of expense in making numerous patent claims for self-protection and in paying royalties on, or combating in the courts, many patents that represent nothing fundamentally new by way of invention. Many are mere combinations of processes and devices long known and in use.

Inventors are no doubt entitled to protection in the exploitation of their inventions, but this protection should be administered with due regard to essential justice and to general public interest.

That engineers and their clients may at least know what burden of expense for patent royalties they are called upon to meet, engineers should inform themselves more fully as to the status of patents on which royalties are covered up in the selling price of equipment; and they should also inquire into the methods of exploiting such patents, because there is a possibility that such exploitation may be carried on in a manner to unduly restrict competition against their client's interests.

Patent Royalties Not Covered in Price of Equipment

Some patents do not relate to equipment used, but do relate to processes which are embodied in plans and specifications prepared by the engineer. Manifestly, it is improper and unjust to require the general contractor to assume responsibility for such patents, especially if the patents are issued in this country after the works are built, or if the patents are of doubtful validity. In case of valid patents, it is preferable for the client to make direct settlement of patent claims and to negotiate such settlement prior to the preparation of plans and specifications. In this connection the services of a competent patent attorney are often helpful.

If the exact amount of royalties to be paid is known and fixed, there can be no objection to requiring the contractor to include a designated sum in his bid to cover such royalties, and under some conditions on public work this method may constitute a convenience.

Situation Not Serious

The patent situation in the sewage-treatment field does not appear to be serious at this time. Important activated sludge patents have expired or are about to expire. There is now sufficient available choice among sewage-treatment processes and devices to permit engineers to avoid or circumvent patents when the demand for royalties is unreasonable or, as a corollary to this, the existence of such latitude of choice tends to force reasonable royalties for patented processes and devices.

Patents relating to sewage treatment have become more numerous in recent years, so that the problem of dealing with patents from the engineer's point of view has become more difficult and complicated. Engineers must devote more attention to such patents than was formerly necessary. However, in complicated situations, especially those involving patents of doubtful validity or excessive royalties, engineers can best serve the interests of their clients by advising the employment of a competent patent attorney.

ACKNOWLEDGMENT.—A paper presented before the American Society of Municipal Engineers at the 1935 Public Works Congress.

Sidewalk Improvement with WPA Funds

IN some parts of Pennsylvania advantage is being taken of the amendment to the Borough Code whereby sidewalks may be built and repaired, and curbs and grass plots established, the labor to be supplied through work relief funds, and the materials furnished by the property owner. It has further been recommended that the owner of the particular property be preferred as a laborer, if he be available, in order that he may earn the cost of the materials.

Borough officials in Pennsylvania and other states have an excellent opportunity of obtaining modern permanent sidewalks on public property at little or no cost to the borough. The opportunity arises out of the acceptance by the Works Progress Administration of sidewalk construction as a suitable outlet for work relief funds. State sanction for such work in Pennsylvania was given in Act 282, sponsored by the Association of Boroughs, according to a report in *The Borough Bulletin.*

Under WPA regulations a community may submit any number of applications for sidewalk projects, provided none exceeds $25,000 in total cost. All the labor is supplied from local relief rolls by the WPA. The cost of the materials is paid to the WPA by the community, which in turn is reimbursed in most cases by its property owners. Many Pennsylvania communities have effected such reimbursements by drawing up agreements with property owners in which the latter agree to pay the cost of materials for their walks. The plan has proved highly successful in every instance, for it means that the owner obtains a new, modern sidewalk at only a fraction of the cost.

Publicity for the Program

Each of these communities has carried on an active publicity campaign in connection with its sidewalk program. Newspaper articles have been written, public and press messages given by community officials, letters written to owners, personal solicitation made, and many other means of bringing the general public's attention to the program have been employed.

When owners' agreements are secured, they are grouped into one or more individual WPA projects. For each project a borough map is marked to show the location of the individual sidewalks. The map, together with the borough's sidewalk specification, is attached to a standard WPA application form, upon which is shown a breakdown of the labor and materials involved.

Inadequate Facilities for Water and Sewerage Services in New Jersey

Extension of Joint Sewer Districts Advocated to Solve Problems

DECLARING that the provisions for handling and treating sewage for the state of New Jersey as a whole are clearly inadequate, the New Jersey State Planning Board recently made public some interesting facts gathered by its staff of investigators during a survey of the water and sewerage services of the state. The inadequacy of existing sewage handling and treatment is described as especially serious for an area of such concentrated population—537.8 per square mile based on the 1930 census. New Jersey ranks 45th in area in the United States and third in density of population. The inevitable result of such concentrated population has been extensive pollution of many streams of the state, and their virtual loss to water-source and recreational use, attended by a continuous threat to health.

"Cases of local wells and no sewage-collection system are frequent," says the statement. "Drainage conditions in many parts of the state are such as to minimize probability of contamination of well water through uncontrolled waste disposal, but in few instances is all danger eliminated." An extension of the practice of joint sewer districts is advocated as an important factor in a solution of the sewage-treatment problem.

Water Systems

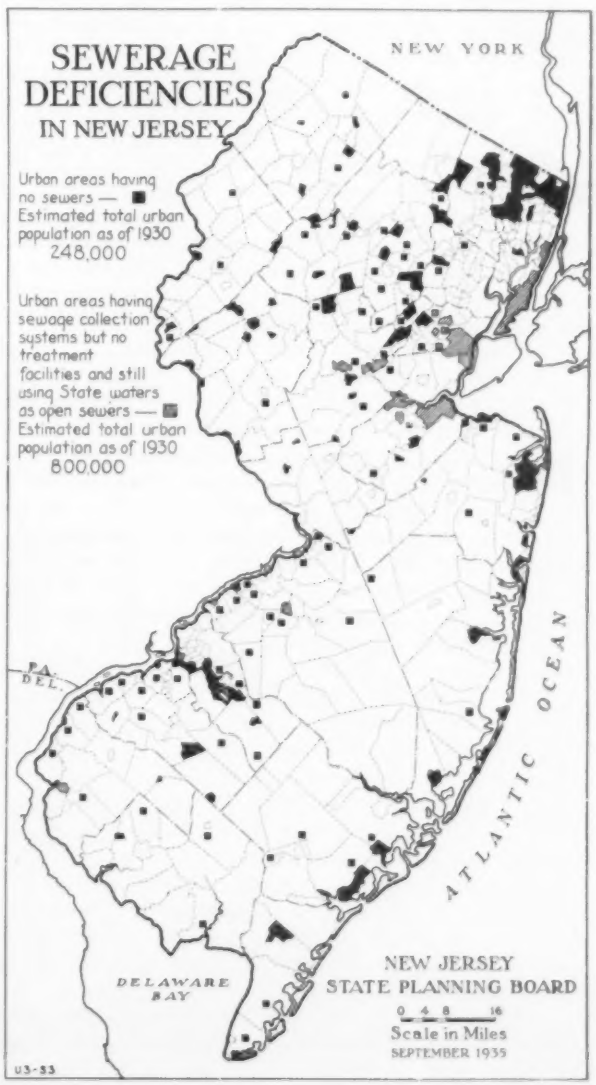
In 432 municipalities representing a population of 3,876,493, according to the 1930 census, about 3,800,477, or 94 per cent of the entire population of the state, is served by one form or another of community water plant. About 68 per cent of this service is by publicly owned systems, the rest coming from privately owned sources. Only 100 incorporated municipalities with populations greater than 500 are lacking community water supply.

Approximately 2,469,566 of the estimated 3,800,477 served get their water chiefly from surface sources. The remainder depend upon wells. The use of wells predominates south of Trenton and for the seacoast communities south of Sandy Hook. Dependable surface sources are both more plentiful and more readily available for the northerly half of the state. Practically all the surface waters of the state require more or less treatment for safe domestic use.

Two hundred and fourteen municipalities with a population greater than 1,000, representing a total population of 466,494 according to the 1930 census, have no sewage-collection systems. Of this number, eight municipalities with a population greater than 5,000 have no sewage-collection systems. Forty municipalities with a total population of 977,796 have collection systems but no treatment plants.

Only 75 municipalities, with a total population of 457,809, have plants that provide the more complete treatments, including chemical precipitation and sterilization, oxidation, and oxidation and sterilization. For 73 municipalities with a population totaling 1,201,813, sewage handling is limited to sedimentation only. Fifty-seven municipalities, with a total population of 1,031,448, provide sedimentation and sterilization only.

In recognition of the virtual impracticability of the individual handling of sewage by certain closely joined communities, 74 municipalities, principally in the New York metropolitan area, have been combined in 12 joint sewer districts. Solution of the sewage-treatment problem of the state probably will involve considerable increase and expansion of such joint projects.


SEWERAGE DEFICIENCIES IN NEW JERSEY
Urban areas having no sewers — ■ Estimated total urban population as of 1930 248,000
Urban areas having sewage collection systems but no treatment facilities and still using State waters as open sewers — ■ Estimated total urban population as of 1930 800,000
NEW YORK
PA.
DEL.
ATLANTIC OCEAN
DELAWARE BAY
NEW JERSEY STATE PLANNING BOARD
0 4 8 16
Scale in Miles
SEPTEMBER 1935
U3-53

Municipal Government a Century Hence

By WILLIAM A. ROBSON
University of London

IF a celebration be held one day to commemorate the the municipal progress of 1935-2035, the most prominent place in the proceedings will be occupied with the matters to which I am about to refer. I am at any rate willing to accept that as a hypothetical test of the validity of my convictions.

The first and most pressing matter which calls for attention is the structure of our local government system. The outstanding fact about the present situation is that although all the existing classes of local authorities have been created by Parliament in comparatively recent times, most of the areas in which these local authorities operate have come down from what is called in the United States "the horse and buggy age," or even much earlier.

The administrative counties, despite a considerable degree of deviation from the historic shires, derive their boundaries in many cases from the limits of the jurisdiction in feudal days of a mounted earl in armor. The parish is an ecclesiastical unit of great antiquity. The origin of the borough often winds back through the centuries to an early settlement of freemen living under conditions utterly remote from those which now prevail. . . .

During the past fifteen years numerous Royal Commissions and official committees have made exhaustive inquiries into the conduct of a large number of municipal functions, such as land drainage, river pollution, water supply, the police, public libraries, highways, education, electricity supply, public health, and several others. In every case without exception the inquiry has resulted in an explicit assertion of the unsatisfactory character of the areas in which the particular service is administered. It would be difficult, indeed, to name a single municipal service of any importance in regard to which the areas of administration are such as to satisfy competent expert opinion. . . .

It is reasonably certain that unless a major adaptation of the structure is effected before we reach the second half of the twentieth century, an alternative solution will be sought through the establishment of boards or commissions set up to conduct local services and entirely divorced from existing municipal institutions. We have already had a foretaste of this in the area Traffic Commissioners and the London Passenger Transport Board. Those who cling too tenaciously to the preservation of "historic" areas in a world where the traditional boundaries have become irrelevant can achieve their object only at the cost of depriving the "historic" areas of all administrative significance and vitality.

The principal features in the structure which need adaptation are, then, in the first place, the inadequate size and imperfect shape of the areas; and in the second place, the existence of several tiers or layers of uncoordinated authorities exercising jurisdiction over the same territory.

There are several possible remedies for the former malady. One of them is to build up areas of appropriate size and shape by merging or combining existing councils for the purpose of conducting particular services. Another is to introduce a large measure of federation into the present structure. A third way out would be to establish directly elected regional authorities for certain large-scale services. . . .

Editorial Note: ***In the concluding chapter of "A Century of Municipal Progress, 1335-1935," part of which comprises this article, Dr. Robson does some prophesying as to the types of adjustment to which resort may be had by English municipalities, during the next hundred years, in the effort to find satisfactory remedies for contemporary imperfections. Most of these shortcomings and needs are so similar to those of our own cities as to make the excerpts here published well worth the attention of American readers; as is also the book itself, reviewed briefly on page 93 of this issue.***

Vast Expansion of Municipal Activities Predicted

A detailed examination of probable developments in the various services is clearly not possible here. A vast expansion in scale and scope is to be expected all along the line, particularly in public health, education, and housing. To mention only one item, a universal municipal hospital service, provided without charge to every citizen, will seem a century hence as commonplace a phenomenon as the police forces or the dust-collection service do to us today.

Two great new streams of activity will probably make their appearance on the municipal horizon in the not distant future. One of these relates to the cultural aspects of civil life. In the century which has passed, the energies of local authorities were directed primarily to the conquest of the material environment. Drains, sewers, infectious disease, public cleansing, gas, water supply, electricity, tramways, omnibuses, highways, parks, fire brigades—these are the characteristic items on the agenda paper of the nineteenth-century councilor. Only by inadvertence, it would almost seem, were one or two cultural undertakings such as public libraries and museums permitted to slip in to vary the staple diet of the local authority—and even then strict limitations were imposed on the sums which might be spent on them.

It is no doubt a good thing that first things should come first. But when all is said and done, a pedestrian and unimaginative flavor hangs about our municipal administration. In the coming years it will, I believe, give way to a more inspiring conception of what civic life can be. The dreary ugliness and esthetic dullness which disfigure many of our provincial towns may come to be no more than an evil memory when the city council becomes the focusing point and radiating center of a whole series of recreational and cultural activities. It is not difficult to imagine municipal theaters and opera houses, municipal concerts, municipal orchestras, municipal cinemas, pageants, exhibitions, lectures, festivals, commemorations of all kinds.

Local authorities may come to embark upon improve-

ment schemes for purely esthetic purposes with the same zest and vigor which they now show for schemes of sanitary improvement. Community centers, public buildings of noble aspect, parkways bordering the main thoroughfares, oases of peace and beauty in which one can seek refuge from the rushing whirl of the traffic, highways designed to enhance the city's consciousness of its aspirations: these are the kinds of attainment which will embody the new ideals of the coming century.

Life without the arts is a dull and barren affair: that has been demonstrated for all time by the Victorians. Sanitation, hygiene, the elimination of poverty, good housing, good education, efficient transport—these are all excellent and indispensable elements of welfare. But they are no substitute for esthetic experience . . . .

The organs of local government are the most disinterested and expressive instruments of popular demand, and it is through their activities that the greatest opportunity arises for utilizing the fine arts. By taking advantage of it in the coming years local authorities will transform both their own outlook and the whole quality of life among the people.

Business Undertakings as Municipal Utilities

Another great stream of municipal activity will lie, I believe, in the direction of industrial enterprise.

The essays on public utilities and housing show how local authorities have gradually come to be managing large business and manufacturing concerns: producing and distributing gas, water, and electricity, operating street transport services, building and letting houses on a vast scale. In addition to these major groups, there are all kinds of other business undertakings which are being conducted here and there by municipal bodies. In Birmingham, it is a savings bank, in Sheffield a printing plant, in Bradford a conditioning house. Unless there is some unforeseen obstruction, a vigorous thrust forward into a whole series of analogous fields may be expected. A municipal milk supply, municipal bakeries, municipal laundries, municipal publishing departments (for school books at least), municipal brickworks, clothing factories, restaurants, hotels—it will be surprising if undertakings of these types do not make their appearance within the next century. There is nothing startling about the idea. Such developments follow logically from existing commitments and may arise in the first instance merely to enable local authorities to satisfy their own needs. To the historian of the year 2035 they will probably seem a less revolutionary development than the events of the past hundred years seem to most of the contributors to this volume.

Such an expansion implies, of course, a much greater degree of freedom of action in some spheres for local authorities in the future than they possess at present. At the same time there is likely to be a diminution of local autonomy, a restriction of discretion, in certain other spheres where it now prevails.

Regional Planning and Control

The most obvious case is that of territorial planning. We have had what is somewhat euphemistically called town-planning legislation in force for about a quarter of a century, and in 1932 the legal powers of local authorities were very substantially increased to enable them to deal both with the built-up portions of towns and also with the countryside. But nothing is more clear than that the town and country planning movement has been so far a dark and dismal failure. There are impressive figures showing the number of local authorities, the acreage, population, and rateable value comprised within the regional planning committees. But these statistics mean little in practice. The amount of effective control in actual operation is trifling. One has only to travel at random through the length or breadth of England to realize that the whole countryside has been and is being subjected to a reckless orgy of maldevelopment and spoliation of increasing intensity. For sheer vandalism and ineptitude, for inability to realize the inevitable disadvantages and dangers consequent upon our own acts, for pure destructiveness on the grand scale of the very things we profess to admire, we of the post-war period have far and away excelled any previous generation. Our superiority in these things over the Victorians is a triumph of efficiency. No former age had discovered the secret of spoiling rapidly both the towns and the countryside.

A vast transformation has taken place since 1919 in the character and location of industries, in the nature and disposition of the highways, in the housing of the people, in the composition of the population, in the supply of electricity, in facilities for transportation and many other important factors in social life. But no attempt has been made to weave these threads of change into a coherent pattern of social life. Even the local authorities' own housing schemes have not been brought into organic relation with a comprehensive system of territorial planning. In the metropolitan region of London, an area with a population greater than any one of fifteen separate European nations, there is not a planning scheme of any kind in existence. It will take generations to clear up the mess which has resulted from the "prosperity" of the London region in the past fifteen years.

The present outlook in regard to civic planning suggests that after a further period of confusion and ineffectiveness an attempt to stem the tide of waste and misdirected energy will be made through the setting-up of a national planning agency. This body will be charged with the task of controlling the location of houses, flats, factories, shops, and other business premises; of indicating the territorial developments of public utilities, transportation, and other essential services; of making policy in regard to roads, parks, open spaces, and so forth. All this will be done on very broad lines, and it will then be left to the local government planning committees to work out detailed schemes to implement the master plans. . . .

A Hopeful Note

This volume may end on a hopeful note. There are plenty of causes for pessimism in the world, but the outlook in English local government is not amongst them. An unlimited vista of future usefulness and expansion stretches before us. We can look forward to the coming century in the most cheerful sense of the term.

Whatever the future may hold for our economic system, local government is likely to remain firmly established as the most effective instrument of social welfare in our national life. Adherents of all the major political parties are agreed in recognizing the fundamental value of our municipal institutions, and this unity of opinion is of far greater moment than the temporary party conflicts about particular questions or the divergencies of view as to

whether local authorities should adopt this policy or that, which enliven the scene from time to time. Local government is likely to continue and to expand, no matter whether the future trend of our society lies in the direction of socialization or of a state-supported capitalism, though its position in the national economy may vary considerably in the one case or the other.

There is, however, one indispensable condition for the continuance of local government: namely, that the essence of our democratic institutions persists as the subsoil from which it can draw its life and strength. The forms of our system can be changed almost beyond recognition, but not its substance. The spirit of English local government depends on three things: the right of the whole local community to elect at periodic intervals a council of their own choosing; an opportunity for every citizen to participate in the work of the council; and the right of free discussion and criticism. If these things are not preserved, the system will quickly fade and die.

There can be no such thing as local government, in the sense in which it is celebrated in this volume, under a dictatorship. Freedom in the localities implies freedom at the center. Dictatorship at the center inevitably involves the arbitrary supersession of local freedom and initiative, the curtailment of local responsiblity and opportunity.

The events of our own time, no less than the experience of history, bear witness to the truth of that conclusion.

Elizabeth Plans to Keep Fire Losses Low

By **WILLIAM H. KENAH**
Chief of Fire Department, Elizabeth, N. J.

THE Elizabeth, N. J., Fire Department was one of the first to be completely motorized (in 1917), before either Newark or New York had done it. Four of our present pumping engines—two Seagraves and two American La France—date from that year, and our Board of Fire Commissioners plans to replace these at the rate of one pumper per year.

Our fire losses have dropped so substantially in the last two years that there is temptation to boast about it; but we don't do it, because we know that a big fire may break out at any moment and put us back where we were in, say, 1930—at $2.79 per capita. In 1931 the figure was $1.83; in 1932 it was $2.22; in 1933 it dropped 47 per cent to $1.19; and last year it was $0.56, a further drop of 53 per cent, or 75 per cent from 1932.

Two years ago the city accepted the Federal Government's offer of CWA labor and rehabilitated every one of our nine fire houses, re-equipping them throughout. There are three double houses and six single houses. We contemplate establishing a rescue squad company, for which appropriate apparatus will be purchased. On October 1, we established a fire-prevention bureau, to start in a small way and develop as needed. Instead of pulling men for this work out of the combatant companies where they may be needed, we now assign men exclusively to fire prevention. A fire prevention code which we believe is the last word to date was adopted by the City Council on July 5, 1935.

Our apparatus consists of ten 1,000-gallon pumping engines (one on reserve) and four hook-and-ladders (one on reserve).

HOME OF ENGINE COMPANY NO. 6, ELIZABETH, N. J.

We have not decided whether we will buy 6-cylinder or 12-cylinder engines. The trend is certainly toward high speed, and the multi-cylinder machines give speed and additional power. In Utica a year ago I saw their new 12-cylinder 75-foot aerial take the hills of that city as if on level and without any grunting. Elizabeth is so level that we need no more speed than a 6-cylinder, 1,000-gallon engine can develop; but we may go to 12 cylinders.

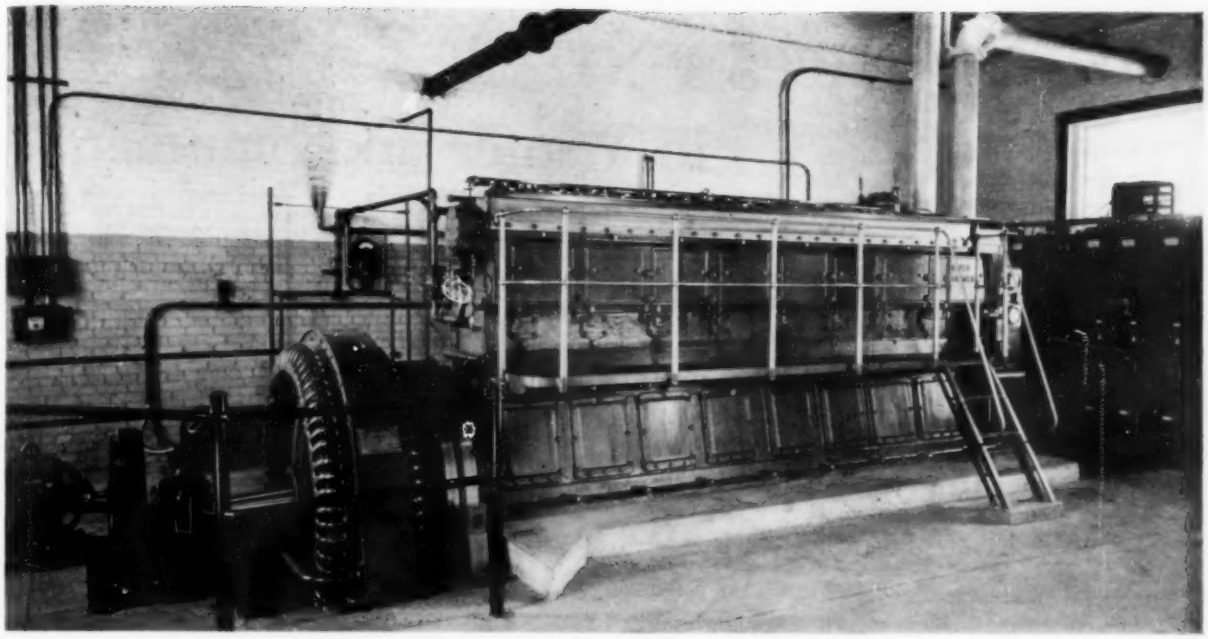
Regarding the enclosed truck, as designed for Charlotte, N. C., we are not considering that type. But I do believe in a windshield and, better still, a cab. I remember one run we had through a hailstorm for ¾-mile. The driver's cap was pulled down over his eyes and he had a job of it. You can say that the men are not hot-house plants, but I'll say they are! The fireman lives in temperatures of 70 and 80 degrees; he goes to bed in his underwear under double blankets in a room temperature of 60 degrees. Suddenly he must hop out of bed and go into the outdoors. He may not be in A-1 condition; he may be one of the older men whom we distribute among the companies. This is particularly hard on a driver or a tillerman, who may be chilled, lose his hold and fall off the truck. A cab is certainly O.K.

Each of our four two-piece companies mans a triple combination pumping engine and a combination wagon without pump. The wagon carries 1,000 feet of hose, ladders, axes, pike poles, and two 35-gallon tanks that receive pressure from two 16-pound cylinders of CO_2 gas. There are three Seagraves and an American La France.

We buy good hose and we get long life—as much as fifteen years. Cheap hose lasts two or three years, and costs $1 per foot against $1.35 for good hose. There has been good hose for a number of years back, but it must be paid for, and cheap hose is a poor investment.

We have the advantage of an excellent water system, which has been improved along with extensive repairs to our streets during the last fifteen years. Larger mains have been laid and pressures increased to 50-90 pounds. All outlet hydrants have been discarded in favor of steam connections. Before our distribution system was taken over by the city, we paid considerable for water service to hydrant; but since then we have had three reductions in rates in common with all other consumers.

Consequently, having volume of water, pressure on the mains, efficient apparatus and experienced personnel, we believe we have a good fire department.



DIESEL INSTALLATION IN THE MUNICIPAL WATER WORKS, GAINESVILLE, TEXAS

Pumping Costs Cut with Diesel

By **L. A. HOUSE**
City Manager, Gainesville, Texas

THE city of Gainesville purchased its steam pumping plant from private owners in March, 1911, issuing $150,000 in bonds to cover the purchase and to make the necessary improvements and extensions in the plant and to the distribution system. In August, 1933, the last bonds were retired. At that time the plant consisted of two steam boilers of 300 horsepower capacity, two McGowan pumps used as service pumps, and two air compressors for the air-lift pumps for the wells. All these units were old and badly in need of replacement.

A surplus having accumulated in the water fund, the City Council recommended the purchase of an 8-cylinder, Type JT Cooper-Bessemer diesel engine of 375-horsepower at 327-rpm driving a 312-kva, 2400-volt, 3-stage, 60-cycle Westinghouse generator with a V-belt driven exciter, together with a switchboard and other appurtenances. A motor-driven Dayton-Dowd centrifugal pump of 1,000-gpm capacity against a 150-foot head, and a motor-driven Pomona turbine pump with a capacity of 650-gpm against a 140-foot head, were also purchased, replacing one of the McGowan pumps and the air-lift at the well, respectively.

On April 13, 1935, the installations were complete, and after tests the units were accepted. No interruption in service has occurred since that date.

An electric distribution line was run to the center of the business district, and the white way, consisting of 69 standards along the square and the main thoroughfare, was tied in. Subsequently, the small air compressor was converted into a motor-driven unit at a very small cost, insuring a potential supply of water much greater than the peak needs of the city.

After four months of continuous operation, an accurate check was made of the fuel and lubricating oil consumption under present operating conditions and under steam unit operation, with the following results:

Present cost of pumping 1,000 gals. of water.....0.0582 mills
Cost of pumping 1,000 gals. with steam unit.....0.3250 mills

Based on the monthly consumption of water, the saving per month will be a little over $500, or $6,000 per year. This is in addition to the substantial saving in the cost of white-way lighting. It is expected that the diesel unit will pay for itself in less than ten years. The engine is operated at about 40 per cent capacity, and eventually, when it is operated at peak load, the savings will increase. The present surplus power is sufficient to take care of the needs of the pumping plant for many years to come.

Front Yard of Alabama's State Capitol Improved

AN eyesore in the "front yard" of Alabama's State Capitol at Montgomery, consisting of unkept acres of waist high weeds, haunted by a half-dozen dilapidated Negro shacks, has been transformed into a well-groomed park of natural beauty,* thanks to the efforts of Governor Bibb Graves and the Alabama Relief Administration.

Plans for the improvement were drawn by E J. Pfingstl, State Landscape Architect, and Transient Bureau labor was used. Shrubs were obtained from the state's nursery at Kilby Prison. Now cool, green, well-kept lawns, sloping up Capitol Hill, meet the eye of the visitor. From each corner of the square, wide, white concrete sidewalks curve to a circle in the center of the plot. Inviting green benches are spaced at intervals along each walk. Large flower-beds filled with colorful blooms dot the square in geometrical pattern. Each evening electric lights glow through young trees planted on the plot.

GEORGE H. WATSON.

* See page 45 of this issue.

Street Cleaning in Seattle in Winter and Summer

By **GEORGE W. FORSYTH**
Assistant Superintendent of Streets and Sewers Department, Seattle, Washington

THE city of Seattle cleans the paved streets in the city by the use of flushers, hand sweeping by pick-up men, and hand sweeping and running of gutters by small trucks, each served by two laborers. The catch-basins are cleaned by Eductors, and in some instances by laborers using a spoon. No mechanical brooms are used for street cleaning.

The Flusher Fleet

The motor equipment consists of a fleet of flushers, which operate both in the daytime and at night. The downtown district is flushed every other night, and the suburban business districts, and apartment-house sections are flushed on an average of once a week. The outlying residential districts are flushed once in two or three weeks. All the water used by the Streets Department for cleaning is obtained from the municipal water system, and the flushers draw the load from the fire hydrants. On the average, each flusher is filled thirty-five times a day.

There are seven flusher units in the fleet as follows, all equipped with 1,200-gallon tanks:

Flusher Number	Truck Number	Truck Make	Year Purchased
151	73	Tiffin, 7-ton	1919
152	88	GMC, 5-ton	1921
153	94	Pierce, 5-ton	1923
154	103	Sterling, 7-ton	1926
155	110	Kenworth, 7-ton	1927
156	70	Kenworth, 7-ton	1929
157	76	Kenworth, 10-ton	1931

The first two units are obsolete and have been replaced with equipment which is more modern and more economical to operate. Both Nos. 152 and 153 are still in the possession of the Department and in the winter time are used to supplement the fleet. Flushers 153, 154, 155 and 156 have 1,200-gallon tanks. These various units operate fairly successfully, but when replacement is made it will be very desirable to secure a flusher similar to No. 157, which has a capacity of 2,150 gallons and is equipped with improved pumps which are much superior to those installed on the smaller flushers. It is essential that equipment of this kind be so designed as to cover a considerable area; therefore, speed and volume are both necessary.

The first six flushers listed operate at a speed of from 12 to 14 miles per hour, while the large 10-ton flusher, No. 157, operates from 20 to 25 miles per hour.

The night crew begins cleaning the downtown area at 11 P. M. and works through until 6:30 A. M. The material which is washed to the gutters is flushed to the street intersections, where it is intercepted and placed in piles convenient for the pick-up crew, which follows the cleaning crew immediately.

Cleaning Catch-Basins

The city of Seattle has two Eductors, Nos. 179 and 180, for cleaning catch-basins. No. 179 is mounted on a 5-ton Nash chassis, and No. 180 is mounted on a 5-ton Kenworth. These Eductors are used principally in the downtown and suburban business districts, and hydraulically raise all wastes which are deposited in the catch-basins into the body of the truck. When the truck body is full, the material is hauled to a convenient dump located on an obscure place.

The Eductors clean from 20 to 40 catch-basins per day, depending on the location, with reference to the dump, the character of waste in the basin, that is, whether it is solid or semi-fluid, and the quantity in each basin. There are not enough Eductors to cover the entire city; therefore we find it necessary in the outlying sections to clean the basins with hand labor. In the unpaved sections of the city where catch-basins exist, the deposits are mostly sand and other similar earth and can readily be cleaned by hand; also the refuse is not offensive either to eye or to nose.

The Alley-Cleaning Problem

The cleaning of paved alleys, particularly in the downtown districts, presents a very difficult problem. It is customary for merchants to deposit all wastes in the alleys; theoretically, they deposit this waste in metal containers, but we find it most difficult to enforce this provision in the city ordinances. Paper cartons are now used almost exclusively, and merchants, including the operators of eating houses, etc., find it most convenient to fill empty paper cartons with all manner of garbage; paper collectors who dispose of this material for a consideration, frequent the alleys and dump all refuse other than paper directly upon the pavement.

The contract between the Cities Contracting Co. and the city of Seattle does not require the removal of any garbage unless it is placed in a suitable container; therefore, the company does not remove whatever is placed upon the pavement, and the Streets and Sewers Department is compelled to detail men to shovel the objectionable material into trucks.

The Health Department is cooperating to the best of its ability and is serving notice upon the merchants to use proper receptacles; the response, however, is not entirely satisfactory. This practice on the part of business people results in a most unsatisfactory condition, for the wind blows loose papers and other material from the alleys into the adjoining street areas. We frequently find, after flushing the streets at night, that the early morning winds blow the refuse onto the recently flushed streets, so that by the time shoppers and business people are out the streets present a very untidy appearance.

See The Municipal Index for 1936 for important articles on street cleaning and snow removal.

Garbage Reduction and Incineration Combined in Philadelphia Plant

Stored Garbage, Instead of Awaiting Rubbish for Combustion, Is Digested and the Tankage Used as Fuel

By JOSEPH E. GILL
Principal Assistant Engineer, Bureau of Street Cleaning, Department of Public Works, Philadelphia, Pa.

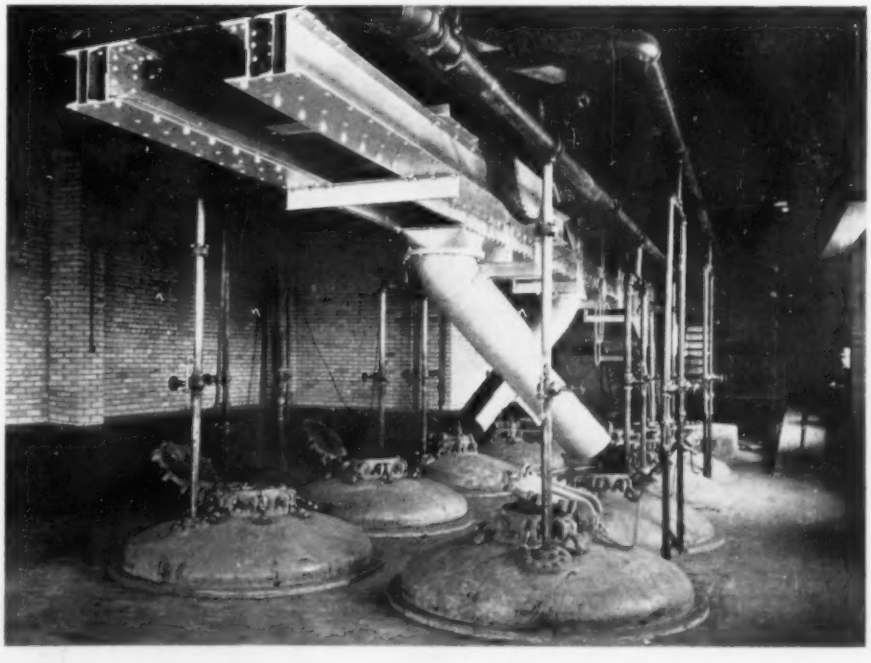
THEORETICALLY, refuse incinerators operate on the basis that the 2 to 1 mixture of garbage and rubbish generates sufficient heat to evaporate the 80 per cent of water out of the garbage and turn the residue into ash. In actual experience in Philadelphia, however, it has been found that 54 per cent of the rubbish collected is not combustible but consists of tin cans, bottles and other substances that will not burn. As a result, the rubbish is sufficient to burn only a portion of the collected garbage. Furthermore, the natural ratio of rubbish and garbage is pushed out of line over the week-ends when housewives put out large amounts of garbage to be collected, resulting from Friday's fish menus and Sunday's dinners, at a time when rubbish collections are lightest.

The result has been that garbage often remains on the floor of the incinerator for a day or two before enough rubbish is collected to burn it. This is unsanitary, and in some cities coal and oil are purchased to supplement the refuse and permit immediate burning of the garbage.

Reduction Provides a Fuel

A new process, or new combination of existing processes, has been developed at the Harrowgate incinerator in Philadelphia which has eliminated the unsanitary storage of garbage on the incinerator floor by disposing of it more quickly and at less cost and without the purchase of additional fuel.

The original Harrowgate incinerator of the Sterling type was one of two built by the city in 1924 at an estimated cost of $700,000. It was designed to burn garbage and rubbish in the proportion of two to one by weight. On July 2, 1935, a new wing, constructed at an approximate cost of $159,000, was opened, providing modern garbage disposal for approximately 400,000 people in the northeast section, through a combination of garbage reduction and refuse incineration. The incinerator building proper is 166 feet long, 80 feet wide, 60 feet high, built of brick, structural steel and reinforced concrete, and contains four furnace units of 280 tons capacity in 24 hours. The garbage reduction unit building is of similar construction and attached to the refuse incinerator. It is 75 feet long, 33 feet wide and 58 feet high. It contains digestors, receiving tanks, hydraulic presses, liquid and grease storage tanks, with a capacity of 96 tons of garbage handled daily in 8 hours.



THE NEW REDUCTION UNIT WING OF THE HARROWGATE INCINERATOR

The loading floor, showing the digestors, conveyor system and steam lines

The New Combination Process

The new process makes use of twelve steel tanks or digestors, each having a capacity of eight tons of garbage. Mechanical steel conveyors take the garbage from a receiving pit in the incinerator building where the garbage has been dumped by wagons and trucks from the collection routes. When a digestor tank is filled, it is sealed and the garbage is cooked by steam delivered from a boiler connected to one of the incinerator furnaces. During the cooking of the garbage the gases are taken off by condensers, which in turn are connected to the sewer. After the garbage is cooked, it is dropped into a receiving tank and from this into horizontal hydraulic presses capable of compressing 2.7 tons every 45 minutes. The liquid from the presses flows through a sluice, and the remaining solids, which are approximately 20 per cent of the weight of the original garbage and are highly combustible, are fed by conveyors into the incinerator furnaces to add fuel to the slow-burning rubbish. This compressed material is known as "tankage."

The liquids from the presses are pumped from the sluice sump into large settling tanks, from which the greases are skimmed and marketed, while the remainder of the liquids is discharged into the sewer for disposal.

Anticipated Costs

This combination of processes is a novelty in its economy, since the recovered grease sold at present market prices completely offsets the added operating costs. The former method, from which there were no by-products, cost $2.12 per ton. It is estimated that the new method will save the city $30,000 a year in fuel and labor. The estimated return to the city from the sale of the grease will be approximately $16,000 per year.

Increased Capacity and No Odors

This process has prevented all obnoxious odors during operation, and also odors from garbage remaining in the plant because of the shortage of combustible material. Approximately 12 tons of garbage can now be disposed of in the same length of time formerly required for 2 tons, with the additional advantage of not requiring purchased fuel for its disposal, increasing the capacity of the plant and lowering the unit cost.

The new process was devised by George W. Kelley, General Superintendent of the reduction and incineration plants, under the direction of A. M. Soby, Chief of the Bureau of Street Cleaning, and Frank H. Caven, Director of Public Works.

An Ohio City's Progress in Street Improvement

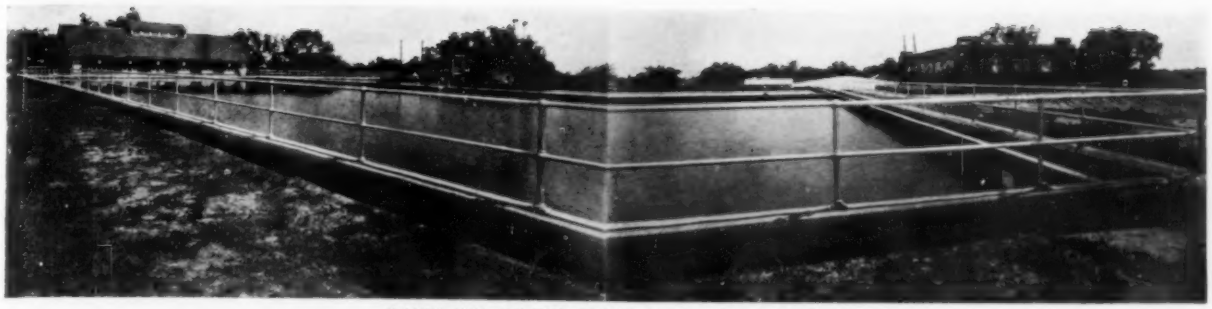
LORAIN, OHIO, has made an excellent start in modernizing its streets, a task faced by most cities and one which has been greatly stimulated by the work relief programs. Only a ride on the old and the new surfaces could effectively impress one with the excellence of the improvement.

The most important project was the resurfacing of West Erie Street, which carries US-6 and Ohio State Route 2, with a traffic count of 12,269 cars and trucks per day. On this street, the 3-inch sheet asphalt surface, placed in 1924, was removed. The concrete base, placed in 1905, was in good condition and was prepared for a new concrete surface by brushing and washing. A double car track was replaced with a single track. Widths of the old street were increased in part from 38 to 42 feet, and the downtown section was repaved to a width of 55 feet. In the widened areas, a 9-inch concrete slab was built. Over the old concrete base, a minimum concrete surface of 5½ inches was laid. A 1-2½-3½ mix was used for the concrete. Transverse expansion joints were placed every 30 feet, and contraction joints were placed at 10-foot intervals to insure control of cracks.

Removal of the old surface cost 27 cents a square yard. The average cost of the new concrete surface (16,243 square yards) was $1.34 per square yard.

The second project in this program was the resurfacing of West 21st Street between South Broadway and Reid Street. On this street double car tracks were left in place. The 3-inch creosote wood block surface, on a 1-inch sand cushion over a 6-inch slag concrete base, was removed at a cost of 15 cents per square yard. This block surface was replaced with a concrete surface of 4 inches minimum thickness at a contract price of $1.25 per square yard. On this improvement a 1-2½-3½ concrete mix was used. The new surface joins with a concrete section placed in 1929.

SECTION OF WEST 21ST STREET, LORAIN, OHIO, NEAR ST. JOSEPH HOSPITAL, BEFORE AND AFTER RESURFACING



PANORAMA OF THE MUSKOGEE WATER WORKS

Left to right: The chemical house, stacks of the pumping station, asbestos-cement roof of clear-water basin, new filter building, and in foreground, the settling basins

New Filters and Other Improvements in the Muskogee Water Works

Novel Method of By-Passing Basins During Guniting

THE water supply of the city of Muskogee, Okla., has gradually been improved over a period of years with the use of engineering talent from the Southwest and the East. The latest work under a PWA project consists of guniting the large settling tank and converting it into two 3-mg tanks, and the construction of a modern filtration plant. This work was completed and the plant placed in operation early in May, 1935.

Source of Supply and Intake Tunnel

The source of the water of Muskogee is the Grand River, which derives its water from the Ozark Mountains and the prairies. The intake is at the end of a ½-mile tunnel 54 inches in diameter, with 30 feet of shale cover. It extends about ¼-mile above the confluence of the Grand River with the Arkansas River, and was laid out by Alexander Potter, of New York.

Pumping Equipment

A double battery of Casey-Hedges boilers of 250-hp each is fired by natural gas and furnishes steam for the Allis-Chalmers steam pump which was installed in 1911. Although its capacity is about 7 mgd, it is operated at only 5 mgd. A Prescott steam pump is held in reserve, but is seldom used. The main unit of the high-pressure system which delivers water to the Agency Hill Reservoir at the far side of town is a battery of Manistee centrifugal pumps driven by General Electric motors. A 7-mgd unit with a 400-hp motor has two stages, and on a separate shaft is a booster with a 200-hp motor which adds 1½-mgd to the capacity.

On the low-lift service at the shore end of the intake tunnel are a 5-mgd DeLaval centrifugal with a General Electric steam turbine and an electric 6-mgd DeLaval centrifugal and a similar 1¼-mgd unit.

Measuring the Output

A Stevens water-level recorder made by Leupold Voelpel Co., of Portland, Ore., and two Builders Iron Foundry venturi meters are installed with their recorders in an old laboratory and office building. There is a venturi on the low-service and another on the high-service line. The water-level recorder shows the level of water in the clear well at the plant.

The Chemical House

The water from the low-level pumps is delivered to a mixing tank in the chemical house, where iron sulphate at rates varying from 50 to 300 pounds per million gallons, and lime at rates of 50 to 300 pounds per million gallons, are added, depending on the turbidity of the water, which ranges from 200 to 2,100 parts per million. The treated water flows to a Dorrco Flocculator for thorough mixing. The chemicals are measured by two Omega dry-feed machines.

The average application of chemicals for the entire year ending June 20, 1935, was 149 pounds of iron sulphate and 143 pounds of lime per million gallons. The turbidity of the raw water during this period was higher than the average for several recent years.

Settling—Old and New

When the construction program was completed, it was possible to have the water flow to a pre-settling basin and then to the filters. Under the earlier operation this basin was a single 6-mg unit with inlet and outlet flumes. As part of PWA Project 1653, it has been divided into two 3-mg units with a center wall, and the entire basin has been further waterproofed with a coat of gunite by the National Gunite Construction Co., of Boston. It is now possible to operate these two basins in parallel or as separate units. Under present conditions they are operated alternately for 30 to 45 days and then shifted to permit cleaning.

During construction, when the large settling basin was empty, it was necessary to by-pass it to handle the water to the smaller settling basins. A wooden flume was built from the Flocculator around the west side of the settling basin and lined with tar paper coated with asphalt. This was connected with the old effluent flume at the south end of the basin, and then ran through a cast iron pipe to the

control chambers of the smaller or old secondary settling basins. These two units of 1½ mg capacity each are now clear-water basins.

In the control chambers the water was carried over the center wall by a wooden flume to the east basin, and then through the wall dividing the settling basins to the second basin and back to the control chamber and to the high-lift pumps.

Now that the plant is operating with the filtration plant, the east basin has been covered with Johns-Manville corrugated asbestos and cement roofing and will be used as a covered clear well. It is expected that the other unit will be covered later as another PWA project, giving 3 mg capacity for the clear well, and all covered.

The New Filter Plant

With raw-water turbidities running as high as 2,500, the old method of operation merely as a settling basin plant was not entirely satisfactory. The new filtration plant was part of PWA Project 1653 and serves to remove the last vestige of turbidity from the water.

Pipe Gallery

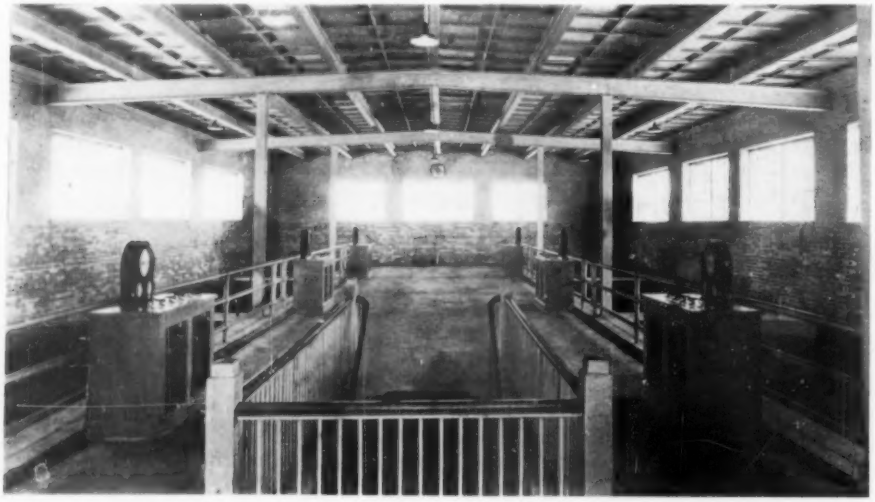
The pipe gallery is well designed, with the pipes either at the side or carried overhead on I-beam bents. Beneath the bents is the clear-water flume, which runs direct to the clear well, but the flow may be diverted to the pump well, by-passing the clear well if desired, by operating two Chapman sluice-gates.

All cast iron pipe and specials for the pipe gallery were furnished by the National Cast Iron Pipe Co., and the valves by Rensselaer. An 8,000-gpm, single-stage, 6-inch Goulds centrifugal pump with a motor operating on 2,200 volts, taking its suction from the filtered-water flume, is used as a wash-water pump.

A 24-inch cast iron waste and sewer line runs 660 feet from the pipe gallery to the Arkansas River.

Agency Hill Reservoir

Agency Hill Reservoir, with a capacity of 5 million gallons, was erected in 1912 as a part of the improvements then made in the original system from the plans of Alexander Potter. Early in 1935 this reservoir was gunited inside and outside and roofed with Johns-Manville corrugated asbestos cement roofing, which matches the concrete of the structure admirably. The elevation of this reservoir on a hill gives a pressure of 75 pounds in the business section of the city. A 24-inch feeder main runs direct from the pumping station to this reservoir, but is connected to the cross-mains of the gridiron distribution system through the city.



INTERIOR OF THE NEW FILTRATION PLANT AT MUSKOGEE

The filter building is 81 x 89 feet in plan. As one enters, the laboratory is located at the right, and the office and lavatory at the left. A remote recorder for the clear well is mounted on the office wall.

There are six 1½-mg filter units, which can be run at 50 per cent above the rated capacity if necessary for short periods. The underdrains are 3-inch cast iron laterals 8 feet 9 inches long, and 60 to a filter. The gravel bed is 18 inches deep, with 24 inches of sand above. The concrete wash-water troughs are 18 inches above the sand and have rounded edges to give smooth flow of the wash water. The lift of the sand in washing is a maximum of 6 inches. At the end of the filter operating floor is an illuminated dial showing the elevation of the water in the clear well. The dial in the office records the elevation.

Just beyond the laboratory is the chlorine room, where three Wallace & Tiernan machines are installed. One feeds the chlorine for pre-chlorination and another the ammonia for pre-ammoniation, and the third is for final chlorination after filtering.

The hydraulic control tables for operating the filter valves were furnished by Builders Iron Foundry and have marble tops and wood panels in front. A loss-of-head gage and a meter dial are mounted on each table.

Agency Hill is the present site of one of the U. S. Veterans Administration reconstruction hospitals, and also the location of one of the earliest buildings still standing in Oklahoma. It is the old Agency House built in 1876 as the first structure to house the offices of the administration of Indian affairs.

The original water works for Muskogee were designed by Burns & McDonnell, of Kansas City, the improvements made in 1912, including the intake tunnel and the Agency Hill Reservoir, were designed by Alexander Potter, of New York, and the present changes and filtration plant were designed by Victor H. Cochrane of Tulsa, Okla. G. N. Toops was construction engineer for the city on the recent improvements. The water works are operated under the direction of T. P. Clonts, City Manager.

Activities of 46 State Planning Boards

National Resources Committee Reports Notable Progress in State and Local Cooperation

EVIDENCE of a remarkable growth of interest and action in planning better use of state resources, and in state stimulation of county and city planning activities, is to be found in reports released last month by the National Resources Committee.*

Especially significant is the fact that in the short space of two years 46 state planning bodies have been formed, and that 32 of these groups have been set up by legislative enactment as permanent Planning Boards in their respective commonwealths.

Two interstate or Regional Planning Commissions also have been organized with the cooperation of the State Planning Boards in New England and the Pacific Northwest. The new State Planning Boards, as pointed out by the National Resources Committee, fill a gap between that Committee on the one hand and some 700 city planning boards and 400 county planning boards on the other. Cooperation among the local, state and Federal planning agencies has been facilitated through the assignment of planning consultants by the National Resources Committee to the State Planning Boards. These consultants have furnished information and technical aid to the State Boards, which, in turn, have assisted in the development of county and municipal planning progress. Through the use of unemployed draftsmen and statistical and clerical helpers, provided by the CWA and the FERA, State Boards have prepared a series of reports, or inventories, of their resources, needs and probable future.

While many states are shown to have problems peculiar to themselves, their more serious problems, according to the report, are those that they have in common. The methods and technique of planning developed have been an extension and expansion of the survey and planning work of city and metropolitan county planning boards and of the research and planning activities of the various Federal agencies, usually in cooperation with the state universities.

Indicative of the activities of the 46 State Planning Boards is the following list, which has been compiled by selecting a wide variety of items, but one only for each state, from the many reported by the National Resources Committee. In many cases, of course, similar activities are being urged or conducted by the Boards of several states.

AGRICULTURE.—A classification of types of farms and predominating agricultural problems has been completed.—*Alabama.*

PUBLIC WORKS.—The State Planning Board has completed a public works inventory as outlined by the National Resources Board and the Public Works Administration. In this work the Board has had the support of county planning boards and individuals throughout the state.—*Arizona.*

LIBRARIES.—One of the recent achievements of the State Planning Board is a preliminary study of a program for the development of a state public library system.—*Arkansas.*

MAPS, CHARTS, ETC.—The staff of the Board has produced a quantity of maps, charts, and other useful material to serve as bases for planning.—*California.*

STREAM POLLUTION.—An investigation of stream pollution, together with a study of water-borne diseases, has been conducted jointly with the State Board of Health.—*Colorado.*

GARBAGE DISPOSAL.—A garbage and household waste disposal survey has been made, in cooperation with the State Water Commission, in every municipality of the state with a population of 2,000 or more.—*Connecticut.*

PUBLIC INSTITUTIONS.—A survey of state-owned public institutions has been made, and the crowded conditions and inadequacy of the various plants are clearly indicated.—*Florida.*

PREPARATION OF PROJECTS.—Under executive order the duties of the present State Planning Boards have been restricted to cooperation with local and state agencies for the purpose of preparing public works projects for application to the Federal Government.—*Georgia.*

CREATION OF COUNTY AND LOCAL BOARDS.—As a result of the State Planning Board's activities, 100 per cent of the counties and 76 per cent of the cities and towns recently have organized planning boards, and the Idaho Legislature has enacted comprehensive laws in support of state and local planning.—*Idaho.*

RECREATION.—The State Planning Commission and its staff have made an inventory of recreational facilities and needs, and a study of leisure-time activities.—*Illinois.*

TRANSPORTATION.—Transportation studies have been made, including conferences with railroad executives, truck and bus operators, and shippers, for the purpose of discussing coordinated transportation.—*Indiana.*

SOIL EROSION.—Among other studies conducted during the last year is that of waste land, soils, and erosion control.—*Iowa.*

RESOURCES.—In its first progress report, the Board published an inventory of the natural, social and economic resources of the state, the first of its kind ever made in Kansas.—*Kansas.*

GRADE CROSSINGS.—A grade-crossing survey has been made in cooperation with the railroads and the State Highway Commission. A map is being prepared locating dangerous grade crossings.—*Kentucky.*

WATER RESOURCES.—A large amount of valuable data has been compiled concerning water resources, particularly in the important field of hydroelectric power supply and distribution. The Board's extensive studies of the Passamaquoddy tidal power project were found valuable in the preparation of the plan and recommendations presented by the Governor's special commission.—*Maine.*

HIGHWAY CONSTRUCTION.—A published report has been made on a 10-year highway construction program for the state.—*Maryland.*

COUNTY ZONING.—A County Zoning Act has been adopted by the Legislature, providing that the State Planning Commission shall collaborate on county zoning problems.—*Michigan.*

POPULATION TRENDS.—A study of population trends is basic to several reports of various committees of the State Planning Board, and has been summarized in one of the reports of the Board.—*Minnesota.*

RESETTLEMENT.—A comprehensive survey of land-use problems has been made by the land planning consultant of the state, who recommends that the Government acquire sufficient arable land upon which to settle several hundred farm families now on relief, which would provide a permanent living through a combination of reforestation, farming, processing, and co-

* The National Resources Committee is headed by Secretary of the Interior Harold L. Ickes, Chairman, and consists of Frederic A. Delano, Vice-Chairman; Secretary of Commerce Daniel C. Roper, Secretary of War George H. Dern, Secretary of Agriculture Henry A. Wallace, Secretary of Labor Frances Perkins, Federal Emergency Relief Administrator Harry L. Hopkins, Dr. Charles E. Merriam and Dr. Wesley C. Mitchell. Charles W. Eliot, 2d, is Executive Officer of the Committee.

operative marketing, the total project to be self-liquidating.—*Mississippi.*

FORESTS.—Eight large national forest projects have been approved, and property acquisition is proceeding in all of them.—*Missouri.*

INDUSTRY AND AGRICULTURE.—Planning studies have enabled the Board to determine methods of establishing greater stability for agriculture and industry, of improving the condition of families in distress.—*Montana.*

LAND USE.—Because of the demands upon the natural resources of the soil, land-use studies have been the chief concern of planning research in Nebraska. Approximately 98 per cent of the total land area in the state is in farms and ranches.—*Nebraska.*

POWER.—One of the most important projects in which the State Planning Board has interested itself has been the establishment of adequate power districts and facilities in the Boulder Dam area.—*Nevada.*

DISSEMINATION OF INFORMATION.—The State Planning and Development Commission is endeavoring to serve as the central agency in the state for both the determination and analysis of facts and problems basic to state planning; for the dissemination of pertinent information; and for active cooperation with all Federal, state and local agencies on physical, social and economic matters.—*New Hampshire.*

COUNTY AND MUNICIPAL PLANNING.—One of the accomplishments of the State Planning Board is the stimulation of county and municipal planning through new legislation, and by the formulation of working procedures for the local planning boards.—*New Jersey.*

FEDERALLY OWNED LANDS.—A Land Use Committee, appointed by the State Planning Board, is considering the state's greatest problem, that of land use, and particularly the use of Federally owned lands, which consititute a large percentage of the state's area.—*New Mexico.*

HIGHWAY BEAUTY AND SAFETY.—One of the recommendations in the Planning Board's summary report of progress of January 14 is that the state should regulate service stations, billboards, and other structures along its highways, to preserve the beauty of the countryside and to increase highway efficiency and safety.—*New York.*

RE-INTEGRATION OF AGRARIAN CULTURE.—The State Planning Board intends to place special emphasis on the problem of re-integration of agrarian culture, to which end it will lend its support to three major projects—rural electrification, soil erosion service, and rural rehabilitation programs.—*North Carolina.*

WATER CONSERVATION.—One of the studies which are now being undertaken by the Board with a view to aiding administrative agencies is that of water conservation.—*North Dakota.*

RURAL ELECTRIFICATION.—One of the chief studies of immediate importance recently completed is a state-wide rural electrification survey, in cooperation with the State ERA.—*Ohio.*

BUILDING CONSTRUCTION.—The Board has set up an architectural division, which is at work studying the possibilities for construction of seven of the nine state institution dormitories authorized by the last Legislature. Four other state institutions have been visited, and studies for the development of the physical plans in each are being made.—*Oklahoma.*

STATE CAPITOL GROUP.—One of the projects now in progress is a comprehensive plan for a new State Capitol group at Salem.—*Oregon.*

TRAFFIC.—One of the activities of the State Planning Board is the completion of plans for a traffic survey as a basis for future highway development.—*Pennsylvania.*

HOUSING.—Following a survey in cooperation with local agencies, of slum conditions in Providence, the Planning Board prepared detailed plans for a slum-clearance project and a new housing development which was submitted as a self-liquidating project to the PWA.—*Rhode Island.*

AGRICULTURAL LAND USE.—In 1934 the South Carolina Emergency Relief Administration conducted a thorough agricultural land-use survey of the state, obtaining data on acidity of soils, general farm organization, livestock then on farms, topography, erosion, soil types, crop land use, acreage and management. It is now proposed that the land-planning consultant assume supervision of the tabulation of these data, from which land-ownership maps could be compiled.—*South Carolina.*

RECREATIONAL LANDS.—Through its various committees, the State Planning Board has designated and recommended for public purchase a large number of areas, most of them of a submarginal nature, for parks, upland game refuges, migratory water-fowl refuges and forests.—*South Dakota.*

SCHOOLS.—A study now in process is a survey of the physical plant of the public schools of the state, together with recommendations for a future building program.—*Tennessee.*

NATURAL RESOURCES.—The work of the original Board has largely consisted of collecting and correlating information concerning major resources and needs of the state and its people.—*Texas.*

PUBLIC WELFARE.—One of the accomplishments of the Planning Board is the recommendation for a Statutory Department of Public Welfare.—*Utah.*

PUBLIC HEALTH.—Two maps have been prepared from data supplied by the State Department of Public Health: (1) a medical map showing the location of all physicians and hospitals in the state and the main road systems about those towns having no resident doctors; (2) a sanitation map showing the distribution of present water supplies and sewerage systems and the location of disposal plants.—*Vermont.*

ADVISORY SERVICE.—The Virginia State Planning Board has endeavored to perfect a plan for its operations as an advisory-coordinating unit designed to advise the Governor, the General Assembly, and the administrative departments of the state with relation to those types of state activities which may be benefited by planning procedure.—*Virginia.*

PARKS AND PLAYGROUNDS.—Recommendations have been made for the purchase, exchange and extension of state parks and playgrounds.—*Washington.*

POPULATION.—Trends in population are now being studied.—*West Virginia.*

EDUCATION.—Studies and recommendations have been made for the reorganization of the administrative and taxation policies of the state educational system.—*Wisconsin.*

WATER SUPPLY AND SEWERAGE.—A preliminary survey has been made of the municipal water-supply and existing sewage-disposal plants in all the principal cities and towns of the state.—*Wyoming.*

STREET WIDTHS.—One of the accomplishments of the Commission is a thoroughfare plan for the District of Columbia, together with acceptance by the municipal authorities of standard street widths and sidewalks.—*District of Columbia.*

State Planning Boards to Receive Substantial Federal Aid

Setting aside of over 2½ million dollars of WPA money for the purpose of supplying staffs to state planning boards provides an excellent opportunity for these agencies to continue the work they have previously undertaken and to initiate new planning programs, Paul P. Oppermann, Assistant Director of the American Society of Planning Officials, informs members of the Association.

The total amount to be expended by WPA for this purpose, as approved last month by Comptroller General McCarl, is $2,644,538. Allocations are to be made promptly available to states upon presentation of projects for the state by the consultant assigned to the state planning board by the National Resources Committee. These grants are designed to supplement state appropriations for planning.

FORWARD STEPS

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

Barren Tract Becomes Municipal Stadium

HARTFORD, CONN.—What was once a barren five-acre tract of unused parkland has been converted at low cost by the Hartford Park Department into one of the largest and finest municipally owned athletic stadiums in the East. Enclosed by a high board fence, it embraces a grass infield baseball diamond, a regulation football gridiron, and will have a quarter-mile cinder track before spring. The total area is so large that none of these facilities will interfere in any way with another.

The stadium is located in Colt Park on the bank of the Connecticut River within a stone's throw of the heart of the business district. When, a year ago, George H. Hollister, Superintendent of Parks, and James H. Dillon, Supervisor of Recreation, devised the plan to improve the tract, their purpose was twofold. In the first place, the stadium would utilize waste land, and, in the second place, by enclosing it with a fence and charging a nominal admission, revenue would be provided to be shared with school, amateur and semi-professional teams for the purchase of equipment, etc.

With CWA and FERA funds the project was started. An eight-foot fence was erected, the field was graded and the soil cultivated with rich grass. The diamond was laid out with skinned baselines and a home plate more than 650 feet from deep center field.

While the baseball season still was under way, grounds keepers began laying out the football gridiron, which was placed in use the day the baseball season closed. Plans are under way at present to obtain an additional Government appropriation for the construction of a grandstand, which will house dressing rooms, showers, lavatories, lockers, a supplies room and a drying room. The same portable bleachers are now in use for both fields.

In the event that the grandstand is erected, it is the intention of the Department to offer the use of the stadium as the home grounds of the Hartford Public High School and the Bulkeley Public High School, in which case a quarter-mile cinder track would be constructed for the use of the school athletes. To what better use could waste-land be put?

JOHN M. HURLEY.

THE MUNICIPAL STADIUM IN HARTFORD, CONN.

New Street Sign-Posts in an Ohio Village

WYOMING, OHIO.—This village has recently made and installed new inexpensive street sign-posts that have received very favorable comment both from our own residents and from visitors, as blending well with attractive surroundings in residential sections.

The posts are made by the regular village street crew in bad weather or at odd times when other work is not pressing. The torpedo gravel used for street patching, with the addition of sand and cement in a rather dry mix, gives a rough pebbly finish. One ¾-inch reinforcing rod gives the strength required, and anchors the eye-bolts which hold the sign brackets. We have six moldboards or platens made from 2 x 10-inch common yellow pine, and three sets of side boards which are cut from 2- x 6-inch

ONE OF THE NEW STREET SIGN-POSTS IN WYOMING, OHIO

tapered to 4 inches at top. After casting three posts, the sides can be removed from the first one, so that six or more posts can be cast with the three sets of forms, depending upon the number of bottom boards. After 48 hours the posts can be rolled off the bottom boards and allowed to cure thoroughly before setting in place. The wrought iron brackets are made by a local blacksmith from ⅝-inch rod iron and ¾- x 3/16-inch flat for the scroll.

We took down our old strut signs, repainted them, bought new ones to match and riveted them back to back. Links from old-fashioned pump chain furnish the S hooks for hanging sign to bracket.

The post and two brackets complete can be made for approximately $4.80.

F. G. GEDGE,
Service Inspector.

A Full Stride Forward in Public Health

SHREVEPORT, LA.—Through the skillful handling of WPA and ERA labor, coupled with adroit management of meager public funds, Shreveport city officials have taken a full stride forward in their efforts to do away with an insanitary condition and thereby bring about mosquito and malaria control.

When the present city administration went into office in November, 1934, headed by Mayor Sam S. Caldwell, the Dillingham ditch, which runs through part of the best residential section of the

city, was an eyesore and a breeding ground for vermin and mosquitoes.

Realizing that the public health services of the city should be removed from politics, Mayor Caldwell conferred with parish (county) officials regarding the matter, with the result that the Caddo-Shreveport Health Unit was established with Dr. W. J. Sandidge as directing head.

A short while after taking over the duties of combined city and parish health officer, Dr. Sandidge realized that his limited budget was inadequate, and he began to file numerous ERA and, later, WPA projects in order to utilize Federal funds.

In the South, mosquito and malaria control are thought of as outstanding health projects. One of the most prolific breeding places for mosquitoes, snakes and rats was the Dillingham ditch. Stagnant water stood 4 to 5 feet deep in this ditch, and when the water was later removed, several leaking sewers were found crossing it.

The Federal Government approved an ERA project for labor for the "paving" of Dillingham ditch. Through the cooperation of Shreveport's Commissioner of Finance, John McW. Ford, and of President J. H. Rowland, of the Parish School Board, appropriations totaling $1,600 for materials, labor, etc., were made available. With this small cash fund and by the use of WPA and ERA labor, scrap materials, etc., the Health Unit to date has constructed approximately 1,000 feet of open "paved" ditch at a cost of $1.60 per running foot.

In order that the work might be of the best, Dr. Sandidge visited Memphis, Tenn., before the construction was begun. In Memphis, where a considerable amount of this type of work has been done, he talked with Alfred H. Fletcher, Sanitary Engineer of that city.

Later the Mayor of Memphis, Watkins Overton, allowed Mr. Fletcher to visit Shreveport, where he spent several days in consultation with Dr. Sandidge and other officials of the city and of the health unit.

The Dillingham ditch boasts a unique type of open pavement. Old scrap concrete was obtained from sidewalks, old buildings, concrete bottoms of large oil storage tanks and, in fact, any place where it could be found. The scrap concrete was carefully placed on the bottom and sides of the ditch and then a mixture of three to one sand and cement was swept into the floors and plastered on the walls. The ground surrounding the ditch was then terraced and sodded, thereby creating an attractive and most serviceable drainage ditch. In several blocks of drainage, the ditch now has a fall of several feet, ample to carry off the water.

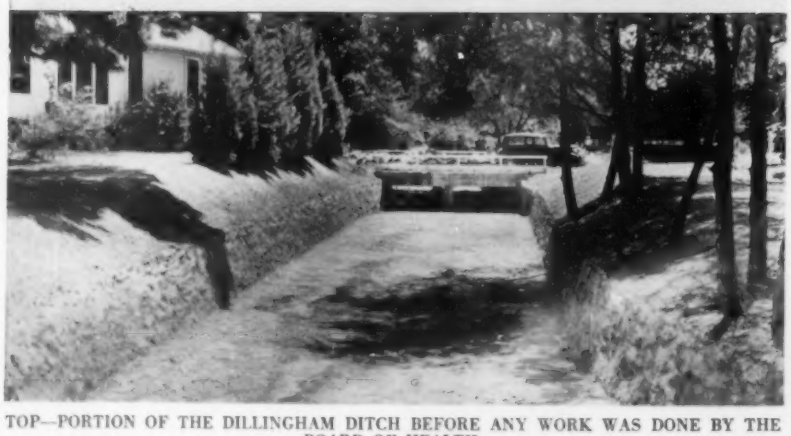
It is interesting to note the method used in raising the bottom of the ditch to grade. Soil, because it settled, could not be utilized. Once again the Health Unit was successful in obtaining "scraps." Several years ago a fire destroyed a nearby glass factory and a large quantity of molten glass was left undisturbed on the grounds after the abandonment of the factory. Realizing its possibilities, officials secured a large amount of this molten glass and used it as a perfect "fill" to raise the ditch to grade. Some few old bricks were likewise used on the base of the ditch.

In addition to the malaria-control projects, the Health Unit has been most successful in utilizing WPA funds in a city-wide rat extermination campaign. Through the cooperation of the Department of Agriculture, the services of a Federal expert were obtained, and the ERA was again called upon to provide labor. Thousands of rats met their death at the hands of these exterminators, and the threat of typhus was lessened and much property saved from their destructive forces.

Another outstanding accomplishment of the Caddo-Sheveport Health Unit has been the construction of an average of 100 Virginia Pit Type privies per month during the past ten months, and once again ERA labor was used in the project. This construction work, a large part of which has been carried on outside Shreveport in Caddo Parish, is also expected to reduce the typhoid death rate in the area served by the unit.

Under the direction of Dr. Sandidge, every inspector and employee of the Board of Health has been especially trained in his work. Night classes, lectures by experts, careful supervision and other methods are used to further the efficiency of all employees.

BURCH LEE, JR.



TOP—PORTION OF THE DILLINGHAM DITCH BEFORE ANY WORK WAS DONE BY THE BOARD OF HEALTH

It was such a scene as this that prompted action to rid this section of the city of mosquitoes and rodents

BOTTOM—SAME DITCH AS AT TOP

Note the terracing and the shrubbery and the manner in which it has been beautified in addition to the sanitation

Fifty Years in a City Engineering Department

To the Editor of THE AMERICAN CITY:

In your issue for September, 1935, page 91, you have an article entitled, "How Long Do Officials Hold Jobs?"

I thought you might be interested in my case. Next April I shall have worked in the Engineering Department of Battle Creek for fifty years. I had charge of the original water-works and sewer construction and later operated both. We have about 50,000 inhabitants, 13,000 consumers, and 115 miles of mains of 24-inch and less diameter.

We have paid for the water works out of its earnings and have a surplus. Last fiscal year, ending June 30, 1935, over $68,000 was taken out of our earnings for the use of other departments, but this was too much, leaving us only about $90,000 for operating expenses and a little of it for construction. We are to have a little more this fiscal year.

There is no water-works debt and there has been none for nearly twenty years. We are the only city in Michigan of anywhere near our size that can say this. Our mains are large, we have very good pressure and, excepting buildings,

we are better cared for than almost any other city with which we are familiar.

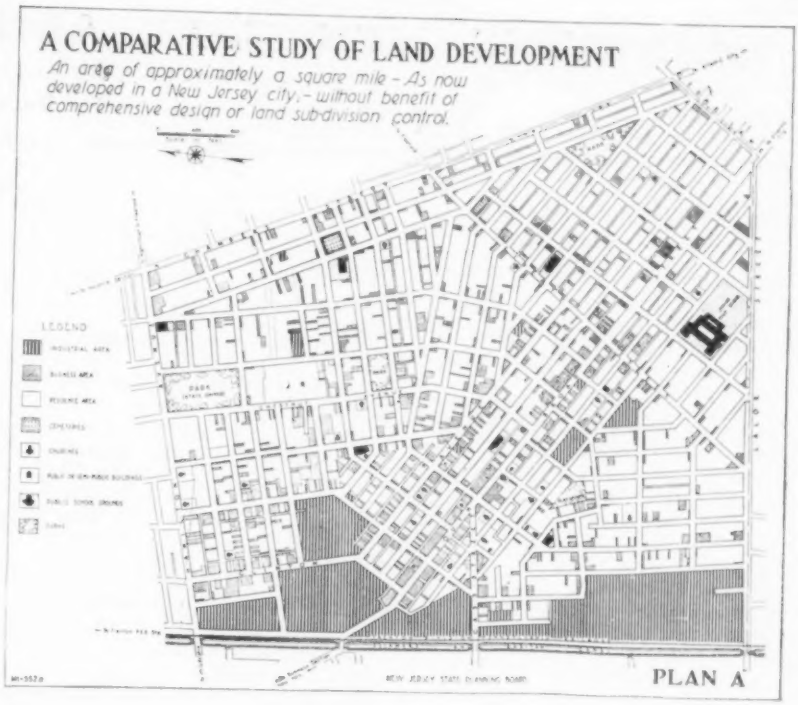
I have been engineering over sixty years, about seven years in railroad work, four years as City Engineer of Erie, Pa., and the balance here.

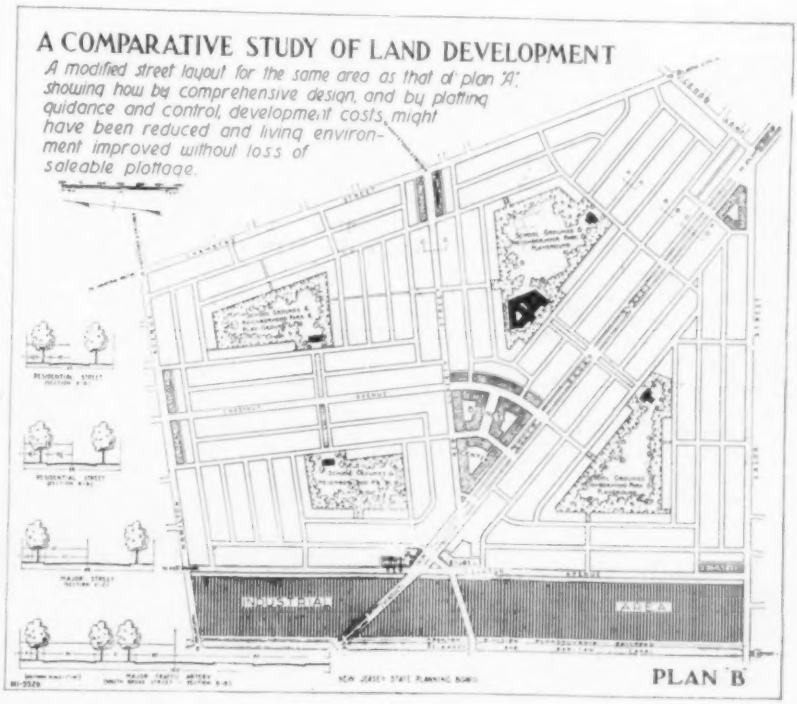
Our terms of office are too short, we have too much politics, and I hope and trust civil service will soon get a strong hold on officialdom. If not, we are likely to go to ruin, I fear.

W. W. BRIGDEN,
Superintendent and Engineer, Water Works,
Battle Creek, Mich.

For More Efficient Land Subdivision Control

TO demonstrate the economies and other advantages of ordered development, a typical square mile in a New Jersey city has been selected by the New Jersey State Planning Board for a comparative study of unguided growth and the sort of thing that might be accomplished through planned guidance and improved design. Accompanying plans, "A," as existing, and "B," as re-designed, tell their own story. Without appreciable loss of salable area or frontage, street mileage has been reduced, in redesign, by more than 25 per cent with a potential saving in street improving cost alone of more than $400,000. Without adding appreciably to area devoted to public open spaces, nearly 60 acres of parks and playgrounds have been gained. Other savings and advantages of the redesign, not so easily isolated, are those of improved livability and efficiencies and economies gained in provisions for underground utilities, sewer, water, and gas. Plan "B," further, insures neighborhood stability, makes provision for automobile parking, and provides more efficient business and industrial districts.


A COMPARATIVE STUDY OF LAND DEVELOPMENT
An area of approximately a square mile - As now developed in a New Jersey city, - without benefit of comprehensive design or land subdivision control.
LEGEND
PLAN A


A COMPARATIVE STUDY OF LAND DEVELOPMENT
A modified street layout for the same area as that of plan "A" showing how by comprehensive design, and by platting guidance and control, development costs might have been reduced and living environment improved without loss of saleable plottage.
PLAN B

In its First Annual Report of Progress, released November 18, the Board says:

"The greatest single source of wastage of public funds and a principal cause of discomfort and of lack of convenience in city living is badly planned and inadequately controlled land development. By reason of unskilled subdivision design, lack of coordination between adjoining land developments, and failure to apply scientific street and roadway widths, the average community spends not less than from 10 to 25 per cent more than is neccessary upon street improvements and underground utilities. This is worse than waste. Residential neighborhoods are destroyed or become prematurely obsolescent by reason of badly directed traffic. Business and industrial areas are reduced in efficiency. And the land wasted in unneeded street space exhausts area resources which might, to much greater community advantage, be devoted to school grounds and parks and playgrounds.

"The land development problem is acute in New Jersey. Many thousands of acres of lands have been platted prematurely in extended metropolitan areas and in summer resort areas. Much of this plottage is badly and uneconomically arranged and will be unable to meet future competition either in residential desirability or in economy of servicing. Fortunately, much of it is still unimproved and, through the vigorous cooperative action of owners, planning boards, and public administrators, can be replatted along better lines or restored to more logical use. While a great surplus of lottage already exists, so much of it is badly designed and improperly located that platting of other and virgin lands will continue. This new platting should be given careful guidance."

As the State Planning Board further points out, a large degree of correction can be obtained through the activities of county and municipal planning boards, both in the preparation of comprehensive master plans to serve as guides for land developers and public administrators, and through the proper exercise of the powers of land subdivision control.

IMPROVING MUNICIPAL ADMINISTRATION

Current Items from the
Public Administration Clearing House

The People's Vote on Local Government Reform

WITH returns all in from early November elections, several important trends toward municipal government reform are noted by Robert M. Paige, Secretary of the Governmental Research Association.

New York State voters approved a constitutional amendment which will permit the Legislature to alter the basic pattern of county government provided by the state constitution and to modernize local government by eliminating obsolete offices and reducing the number of independent local units.

Monroe County (county-seat, Rochester) approved a charter providing for a county manager, thus becoming the first county in New York State to reorganize its government. When the new Board of Supervisors meets in January, it will select a manager for a four-year term.

The city of Syracuse, N. Y., voted to adopt a new city charter which among other things will reduce the number of city councilmen from 19 to 9 and provide that five of the nine shall be elected at large.

Cuyahoga County (county-seat, Cleveland) voted favorably upon a new charter prepared by the County Charter Commission elected a year ago. This new charter sets up a county manager form of government—a county council of nine which will name a county manager and other key executives. The plan will go into effect January 1, 1937. In three other Ohio counties—Lucas, Mahoning and Hamilton—official County Charter Commissions presented proposals for reorganized county government, but they were met with defeat at the polls.

In Toledo, Ohio, voters, using the Hare system of proportional representation, elected the first city council to function under the new city-manager charter which becomes effective January 1, 1936. Other cities electing their first city councils under council-manager charters were Washington Court House, Ohio, and Schenectady, N. Y.

The number of cities adopting council-manager government in 1935 now stands at 17, including the towns of Sewickley Heights, Pa., and Orange, Va., which adopted the plan by ordinance last month.

Old-Age Security for Public Employees

NATION-WIDE old-age insurance should act as a great spur to cities to set up their own retirement systems for municipal employees, Joseph P. Harris, of the Social Science Research Council, told members of the International City Managers' Association in conference at Knoxville, on October 21.

Public employees are not covered under the old-age insurance act of the Federal social security program. It is Mr. Harris' opinion, however, that cities will want to provide retirement allowances at least equal to those afforded under the national law. Many cities which now have unsound retirement systems, he pointed out, "would do well to reorganize them and put them on a sound financial basis."

Drawing a parallel from the national old-age insurance system, which does not require the employee to be employed by one single employer over a long period of years, Mr. Harris said that cities might consider setting up retirement systems on a broader basis than that of a particular city, permitting employees to move from one place to another without losing their benefit rights.

One way of doing this would be to institute a state-wide retirement system similar to that which is now provided for teachers in a number of states. This would not permit the transfer of employees across state lines without loss of retirement rights. Another way would be for municipalities to create a national retirement organization, permitting transfer of persons from one city to another. A third way "could secure the same results by more liberal provisions in municipal retirement systems which did not wipe out the accumulated insurance payments of an employee when he left the service of the city, but permitted him to leave his funds there until he reached the age of retirement."

Taking the Joy Out of Drunken Driving

ARRESTS of drunken drivers are reported on the decrease in some parts of the country, but cities and states continue their campaigns to drag the figures down still farther. The *United States Municipal News*, bulletin of the American Municipal Association and the U. S. Conference of Mayors, cites these examples of how they are going about it:

San Francisco's police, attacking the problem at its source, watch the liquor stores and warn persons who have imbibed too freely not to drive their automobiles. A recent report from this city is to the effect that accidents caused by drunken drivers have decreased, but that those due to "plastered pedestrians" are increasing.

The police of Corpus Christi, Texas, will drive any person home in his own car if he feels unfit to drive it himself. Inebriates requesting this police aid are not jailed unless there is a necessary reason.

Knoxville, Tenn., arrests drunken drivers on both a city warrant and a state warrant. This means double punishment for offenders, who, convicted on the city charge with a probable $5 fine, are also held for Grand Jury investigation, which may bring a criminal court penalty.

Holland, Mich., revokes the license of liquor vendors selling to habitual drinkers.

Texas has made it a felony to drive an automobile while under the influence of liquor, so that all such arrests go to the Grand Jury.

Determining how drunk a driver is and whether he is incapacitated thereby for driving is still in the experimental stages, but Rhode Island plays safe by suspending the driving licenses in cases of drinking motorists, instead of drunken ones. Utah and Michigan report reduced traffic accidents by publishing the pictures of drunken drivers.

Oregon's law on the subject of drunken driving requires a physician's examination before such a charge can be placed, but Portland police are prosecuting under a city ordinance without state authorization.

Training Police Via Movies

MOTION pictures are becoming increasingly important tools for training policemen, according to Arnold Miles, staff member of Public Administration Service and lecturer at the recent National Police Training School, who describes some of their new uses in the November *Civil Service Assembly News Letter*.

Through the medium of movies, the St. Louis Police Department teaches its recruits how to shoot accurately. The film, made especially for this purpose, depicts a fugitive escaping from a lumber yard. It is operated by a projector which is adjusted to stop at the sound of a gun discharge, so that when the practicing policeman shoots, he can actually see his mark. The scene is projected on a screen which can easily be adjusted after being pierced by a bullet.

Lieut. F. M. Kreml, of the Public Safety Institute of Purdue University, utilizes films for teaching the accident prevention and investigation technique originated by him and now used by various police departments. The movie reconstructs an accident, showing in detail the work of the accident investigation squad.

Kansas City's Police Department is making two sets of films, one of which will be used in the training schools to present right and wrong police tactics in such situations as searching a suspicious car, answering a hold-up complaint from a grocery store, and curbing a fugitive traffic violator from a motorcycle. The second set of films will be used to train the public. They will record the daily activities of police in the radio room, the detective bureau, the lost and stolen property room and other divisions. These

films may also be used for training police recruits.

A new sound-film process originated by Superintendent Schwartzkopf of the New Jersey State Police is being developed as an identification device to record what normally occurs in a police line-up. It is planned to develop standard equipment, uniform methods of presentation, a central clearing library for this country and an information exchange with foreign countries, and a cooperative contact with news reels for nation-wide and international broadcasting, with eventual application to television.

Mr. Miles suggests that police administrators and executives should keep in touch, through a committee, with the uses of films in other branches of the public service, so that all applicable improvements may be adopted. He adds that if inter-service information is to be exchanged on this subject, some national agency such as the Civil Service Assembly will be the most efficient means for compiling and giving out information about the uses of films for training purposes.

Punishing the Human Cause of Fires

IF your carelessness or neglect causes a fire in Huntsville, Ala., you are held responsible for the results. This is also true in Greater New York; Berkeley and Pasadena, Calif., Kalamazoo, Mich.; Elmira, N. Y.; Cleveland and Cincinnati, Ohio; Portland, Ore.; Austin, Ranger, Cleburne, Los Angeles, Wichita Falls and Greenville, Texas; Billings, Mont.; Newark, N. J., and any city in the state of Pennsylvania.

By statute, charter or ordinance, these seventeen cities and one state make persons, firms and corporations liable for the cost of extinguishing fires which occur through their wilful negligence. They are pioneers, according to a recent pamphlet of the National Fire Protection Association, in the attempt to change the notion that every man who has a fire is a pitiable unfortunate, to the idea that he may be an offender, who should be condemned.

The National Fire Protection Association is emphatic in its condemnation of the careless who are responsible for fires starting, consume the taxpayer's money in service from the fire department, and damage or endanger other people's property before the blaze is extinguished. The Association is of the opinion that if such people were made to pay in full for the services of the fire department and any damages to person or property, the American fire loss per capita would drop. It urges those who suffer from fires due to the neglect of others to bring suit to recover damages.

"No civilized community should expect its firemen to risk their lives in fighting fires easily preventable," says the pamphlet. "Enough danger will always be encountered in extinguishing those not easy to avoid. Nothing will reduce the number of fire alarms so radically as the fixing of personal responsibility therefor. The utmost achievements of fire-fighting science are crippled and balked by the habits of a people encouraged in irresponsibility toward the common safety." The attention of such a people cannot be attracted and a correction of their mischievous habits achieved by any ordinary methods of polite education. They must be made responsible for their acts of trespass. A man who has a preventable fire picks the pockets of his neighbors either through the medium of fire insurance or unjustified use of the fire department which all must support."

Fuller Use of Advisory Committees Urged

EXPERIMENTATION in the fuller use of citizen advisory committees in council-manager cities was urged in the presidential address of H. L. Woolhiser, City Manager of Winnetka, Ill., at the Knoxville convention of the International City Managers' Association.

"Of course, the fundamental essential for good municipal government," said Mr. Woolheiser, "is an interested and intelligent citizenship. . . . When local government is split up, much use is made of the services of citizens on administrative boards and commissions. While this constitutes a somewhat serious handicap administratively, it does provide an outlet for civic interest along numerous lines. Where patronage government obtains, there is of course a great inducement to civic activity on the part of those who have, or hope to achieve, a selfish stake in the government. The premise of council-manager government precludes the sale of municipal jobs in exchange for civic or political activity; the only inducement that can be offered for civic or political activity is the unselfish appeal of the city welfare and the personal satisfaction to civic-minded citizens resulting from participation as community leaders in the development of public opinion on the many legitimate issues of municipal politics and the selection of qualified representatives for elective office. Because of these limitations, there seems to be a need for future experimentation in the fuller use of citizen advisory committtes, and the encouragement of other organized or interest-groups, geared into the major governing body of the city."

Recent City Manager Appointments

HENRY A. YANCEY, former City Manager of Charlottesville, Va., and since February 15, 1932, Manager of Petersburg, Va., has been appointed City Manager of Durham, N. C., to succeed R. W. Flack, who recently went to San Diego, Calif. Mr. Yancey took office October 1.

John P. Broome, former Manager of Salem, Va., and Summit, N. J., has been appointed City Manager of Petersburg, Va., to fill the vacancy created by H. A. Yancey's promotion to Durham, N. C.

Frank R. Chilton, former City Clerk of Roseville, Calif., was appointed City Manager of San Leandro, Calif., on November 4, to succeed Allen E. Pelton.

Frank C. Dickey has been appointed City Manager of Hollywood, Fla., to succeed M. S. Worland.

Clint Dove is City Manager, Ardmore, Okla., succeeding Charles F. Adams.

J. Dunkel is City Manager of Webster City, Iowa, instead of G. C. Long.

John W. Harkins became City Manager of Goose Creek, Texas, on October 1, succeeding Henry Whiddon, who resigned because of political interference.

E. A. Huset, former U. S. Army Chaplain, has been appointed City Manager of Columbia Heights, Minn., to replace James McKenna.

W. C. Jones has succeeded F. C. Gowdy as City Manager of Elk City, Okla.

Lloyd S. McCann is City Manager of Borger, Texas, succeeding Charles Chapman.

A. J. Merrill, a local man who served as City Manager from November, 1931, to April, 1932, has been reappointed City Manager of Fort Lauderdale, Fla., to succeed Robert M. Kerr.

C. W. Mizell has succeeded G. D. Hughes as City Manager of Heavener, Okla.

Henry T. Roberts, for eighteen years connected with the Lynchburg Foundry, has been appointed City Manager of Radford, Va., He succeeds E. L. Udell, who recently resigned to take a position with a private engineering company.

Mark Thomas has become the new City Manager of Wichita Falls, Texas, replacing A. H. Douglass.

CLARENCE E. RIDLEY,
Executive Director, International City Managers' Association.

The Municipal Bond Market

Recent sales of new issues from the November numbers of *The Bond Buyer:*

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$250,000	Massachusetts, Beach Reservation	1.5	1-10 Ser.	1.35
193,000	Vineland, N. J., Light Plant	3	1-10 Ser.	2.20
750,000	Sheboygan, Wis., Sewage System	2.5	13.5 Avg.	2.47
120,000	Sandusky, Ohio, Courthouse Improvement	2.5	11 Avg.	2.498
1,750,000	Hawaii, Public Improvement	3	5-29 Ser.	2.863
1,800,000	Kentucky, Bridge Revenue	3	14.66	2.99
123,000	Mitchell, S. Dak., Sewer	4	11.66 Avg.	3.46
795,000	Birmingham, Ala., Drainage	4	9.5 Avg.	3.70
110,000	Anderson, S. C., Sewerage	3.75	15.5 Avg.	3.749
1,000,000	East St. Louis, Ill., Levee and Sanitary District Diversion Channel	4	8	3.80
115,000	Chickasha, Okla., College	4	10.16 Avg.	4.23
120,000	Liberty Co., Texas, Road	5	15 Avg.	4.99

News Items from Far and Near

Welch Municipalities Advocate Land-Value Taxation

AT a meeting held in the Cardiff City Hall on September 25, to which 49 local authorities appointed delegates, the following resolution was adopted by the Welch National Conference of Local Authorities:

"That this Conference is strongly of opinion that the existing system of rating should be altered so that local authorities be empowered to levy rates upon owners in respect of the value of land apart from improvements for the purpose of (a) effecting a reduction in or abolition of local rates payable at present by the occupiers of rateable property, (b) securing that the public shall benefit from the land values which arise from the presence and activities of the community, and (c) facilitating the acquisition of land, the provision of houses and the making of public improvements; and that a copy of this resolution be sent to the Prime Minister, the Chancellor of the Exchequer and all Members of Parliament representing constituencies in Wales and Monmouthshire.

"And also that the council of each county, county borough, borough, urban district, and rural district in England and Wales be requested to pass a resolution in similar terms."

A copy of this resolution has since been sent by the Cardiff Corporation to more than eighteen hundred local authorities, asking them to pass a resolution in similar terms.

Moscow to Limit Population in Gigantic Reconstruction Plan

MOSCOW, rich in historical associations, tinged with traces of the Middle Ages, is about to enter its second great stage of scientifically planned transition. A new decree, dealing with a 10-year program of reconstruction, was issued last month. Its scope is outlined by A. K. Dawson, Manager of the Russian Division of the American Express Company:

"The present population of 3,613,000 will only be allowed to extend to a total population of 5,000,000. The area of the city is to be increased from 28,000 to 60,000 hectares, and will contain residential dwellings, social institutions and public work enterprises. The plan is conceived as an architectural whole, and the arrangement of squares, main thoroughfares, embankments and parks will be very much diminished, as old wooden buildings are to be replaced with dwellings not less than six stories high. Over an area of 15 million square meters, which equals the present area of Moscow, 2,500 new dwellings will be erected. The new construction plans call for 390 schools, 17 hospitals, 50 moving picture theaters and 9 big department stores.

"By 1938 Moscow will have approximately 1,000 trolley busses above ground, with the full completion of the subway underground system. New bridges will be constructed over the Moscow River, and old bridges will be raised high enough to allow passage for the Volga steamers, arriving by the new Volga-Moscow canal, which will enable tourists to begin their Volga voyages from Moscow. The new river-canal combination will afford new passenger service from Moscow to the Caspian Sea, and from Moscow to Persia by an all-steamer route.

"The Palace of the Soviets, already under construction, will be the largest structure in the world, with the height of 1,260 feet, housing a Grand Hall seating 20,000 people at one time. On Gorki Street a number of majestic buildings are nearing completion, and express the new architectural premise which calls for decoration with utility. During the past three years, Moscow has erected 5,500 new apartment houses and settled half a million dwellers in them."

Columbia University Inaugurates Planning and Housing Studies

A FOUR-YEAR program of town planning and housing studies, designed to fit the architect for leadership in community development, has been inaugurated at the Columbia University School of Architecture, it is announced by Prof. Leopold Arnaud, Chairman of the School's Committee on Administration.

The Carnegie Corporation of New York, Prof. Arnaud disclosed, has made a grant of $24,000 toward the project, which will be directed by Henry Wright, Fellow of the American Institute of Architects, and noted city planner. The new program, to be carried on as a major division of the School, will embrace both instruction and research, and will provide for wide experimentation in town planning education.

Air Hygiene Foundation Organized

THE Air Hygiene Foundation of America, Inc., has been formed by a large group representing various industries, with headquarters at Thackeray Avenue and O'Hara Street, Pittsburgh, Pa. The purposes of this organization are to conduct, stimulate and coordinate research on problems in the field of air hygiene and to gather and disseminate factual information relating thereto. As an initial activity, a comprehensive investigation has been begun at Mellon Institute of Industrial Research, Pittsburgh, in which the hygienic, technologic and economic aspects of air contamination, especially by dust in the industries, will be studied. H. B. Meller, head of the Air Pollution Investigation at the Mellon Institute, has been appointed Managing Director of the Foundation. He will be aided by Dr. F. F. Rupert and by other staff members as the work progresses.

The investigational program of the Air Hygiene Foundation of America will also embrace medical considerations and studies. The medical adviser will be Dr. Samuel R. Haythorn, Professor of Preventive Medicine in the School of Medicine of the University of Pittsburgh and Director of the Singer Research Laboratories, N. S., Pittsburgh.

State and Local Debts in Relation to Defaults

DEFAULTS on state and local obligations vary directly with the relative per capita burden of local and state debts in each state, according to an analysis by B. U. Ratchford of Duke University in *The Annalist* (New York) of November 22 and 29.

The seven states with the heaviest state and local debt burdens relative to their resources are in the South, and include Florida, Arkansas, North Carolina, Louisiana, Mississippi, Tennessee and South Carolina, Mr. Ratchford finds. When ranked according to debt burdens, New Jersey and these seven states account for more than one-half of all local and municipal defaults in the United States, while the first sixteen states provided almost two-thirds. In general, those states with burdens above the average are the ones which increased their debts most rapidly in the ten years immediately preceding 1932.

A series of state indices of debt burden are presented by Mr. Ratchford, based on the per capita resources of each state compared with its total governmental debt; also percentages of default.

Municipal Expert Becomes Ohio University President

FIVE HUNDRED representatives of leading American universities and colleges and learned societies participated with prominent state officials, alumni, faculty, and 2,600 undergraduate students in the inauguration on November 15 by Dr. Herman G. James as the twelfth president of Ohio University, oldest institution of higher learning in the Northwest Territory and oldest university west of the Alleghanies.

Dr. James came to Ohio University last July from the University of South Dakota, where he had been President since 1929. Prior to that he was Dean of the Graduate School at the University of Nebraska. During thirteen years as Professor of Political Science at the University of Texas Dr. James gave extensive public service in the League of Texas Municipalities, of which he was organizer and Secretary.

TRAFFIC CONTROL AND FACILITATION

Conducted by Publications Committee, Institute of Traffic Engineers, 175 Fifth Ave., New York

Paul L. Green, Chairman; Melvin J. Bankhead, James R. Guthrie, T. T. McCrosky, D. Grant Mickle, Robert A. Mitchell, Edward J. O'Meara, Miss I. K. Rolph, Peter J. Stupka, J. C. Vincent, John C. Wrighton

Accidents Can Be Reduced

By PAUL L. GREEN
Chairman, Publications Committee, Institute of Traffic Engineers

The Institute of Traffic Engineers Asked "How?" and Nine Recognized Experts Answered as Follows

UNDER the same heading in October, ten recognized traffic experts recommended 17 measures toward a drastic reduction in accidents on city streets. We now present nineteen recommendations by nine experts for reducing accidents on the open highways. The accompanying tabulation shows the number of citations for each proposal. For example, seven of the nine participants in the symposium urge education of driver and public, whereas only two comment on the factor of speed. Following are some of the outstanding recommendations made by these men, nationally recognized in their field, whose daily job is to promote the cause of safety on our highways:

E. RAYMOND CATO
Chief, California State Highway Patrol, Los Angeles

A uniform school of instruction in safe driving, under national directorship; i.e., training in the operation of a motor vehicle and the fundamentals of safety; the necessity and value of courtesy; the necessity of efficient motor-vehicle equipment such as tires, brakes, lights, windshields, steering apparatus, and compulsory safety education, particularly automobile driving, in the public school curriculum. Motor-vehicle administrators should be authorized by law to suspend or revoke operators' permits on receipt of sufficient proof of lack of proper qualifications, or violations of law. There is too much "red tape" and legal entanglement.

Compulsory inspection of motor equipment, preferably semi-annually, should also be a national regulation.

HENRY E. NEAL
Traffic Engineer, Ohio State Highway Department, Columbus, Ohio

Establishment of a highway patrol to enforce the traffic laws on rural highways. Such patrol should have a sufficient number of men to efficiently patrol the highways. If the average driver knows he is likely to be called to account for his traffic violations, it cannot help but make him more careful. Ohio has a highway patrol of 120 men, and the force should consist of at least 200 patrolmen.

Consideration should be given to traffic signals at highway intersections where traffic is heavy or travels at high speeds and where grade separation is not possible. In Ohio in 1934, fatalities due to collisions at highway intersections comprised 14.1 per cent of the total.

Building safety into the highways through proper design based on future traffic needs. Present-day traffic with its greater speeds has rendered obsolete a good many of our highways. Roads must be fitted to modern traffic conditions by the elimination of danger points. Widening of pavements, wider shoulders, elimination of ditches, increased sight distances, reduction of horizontal and vertical curvatures, skid-proof pavements, divided roadways, and grade-crossing separations, are essential.

Pedestrian footpaths. In Ohio in 1934, pedestrians constituted 31.3 per cent of all fatalities resulting from traffic accidents on the state highway system. It has been found that most pedestrians struck by automobiles on rural highways in Ohio have been struck within a short distance of their homes. In other words, they were not casual pedestrians but used the highways regularly to walk on. Adequate footpaths would have prevented most of these pedestrian accidents.

GEORGE WELLINGTON
Research Director, Rhode Island Division of Motor Vehicles, Providence, R. I.

I believe it necessary that the public be acquainted with the causes of accidents. All drivers are accident-prone in the sense that they are doing over and over again some one or more things which eventually lead to an accident. This large list of accident causes must become well known to the driving public if we may expect improvement in the situation through cooperation on their part. We must go to work on the individual behind the wheel before we can hope for much further improvement.

. . . an intelligent policy of suspension of licenses where cooperation is not forthcoming.

J. E. FURLONG
Traffic Engineer, Colorado State Highway Department, Denver, Colo.

Compulsory immediate examination of any driver who is involved in an accident or whose record shows him to be developing into a chronic repeater regardless of the interval the license was issued for originally. All licenses should be of a revocable type.

Rigid control and periodical inspection of all brake- and light-testing stations, garages, and so forth, and the penalizing of inefficient stations by revoking their license or permit, which should always be of a revocable type.

I believe much can be done to stop some types of chronic repeaters by impounding the car for a few days rather than by fining the driver—I believe more attention should be paid to this alternative. You personally would not mind a $3 fine, but have you had your car laid up three or four days unexpectedly? It really hurts, does it not? For instance, I saw the record of a motorist some days ago and upon it were, I believe, nine charges of illegal parking so far this year at $3 per violation. Evidently this chap must figure that his parking where he wishes is worth the $3 occasionally to him, but if, based on this record, his obviously needed car were impounded for a few days each time in the future, the habit would become inconvenient to say the least. The same idea apparently works quite well in collecting the various forms of license fees and back taxes.

EARL J. REEDER
Traffic Engineer, National Safety Council, Chicago, Ill.

Conformance with national standards in signs, signals and markings, with the Manual on Uniform Traffic Control Devices of the U. S. Bureau of Public Roads the model.

A compulsory accident reporting law would be necessary to provide an adequate picture of the general accident problem and to enable the Planning Division to identify high accident locations. There is no better single indication of

The Answer to the Rural Problem

Recommendations	*No. Times Mentioned*
1. Education of the driver and the general public	7
2. Strict and uniform enforcement	6
3. Compulsory license law	6
4. Highway patrol	5
5. Ban the unsafe driver	5
6. Adequate signs, signals and markings	4
7. Compulsory accident reports	4
8. Compulsory vehicle inspection	4
9. State traffic engineering bureau	3
10. Improved highway engineering	3
11. Uniform vehicle laws	3
12. Pedestrian footpaths	3
13. Control speed	2
14. Personal publicity for offenders	1
15. Impound the car	1
16. Ban wayside distractions	1
17. Compulsory financial responsibility law	1
18. Federal safety research	1
19. Governors safety committee	1

Making cars safe

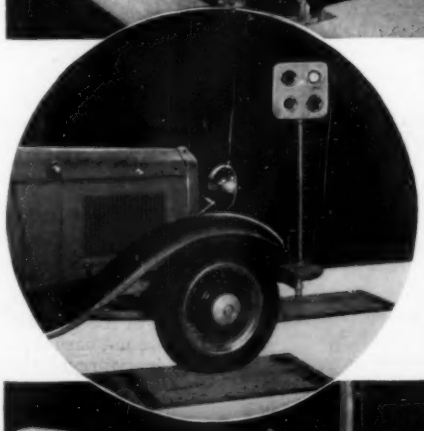
goes a long way toward making *traffic safe!*

THE same scientifically accurate brake and steering tests, on the same make of machines used by the automobile manufacturers themselves in their own final inspections of new cars, give you a traffic safeguard which no one can argue away.

That's what the sensational new Bendix Civic Safety Clinic equipment provides. *Real* tests, that can be repeated time after time with the same answer (try this on any other type of equipment!). Quick tests—five cars at once—a car off the line every minute! Thorough tests—checking headlights, steering "geometry," horn and windshield wiper as well as exact efficiency of each brake, and the equalization of all four brakes.

Moderate investment. Sturdy, long-lived construction. Unmatched financial responsibility. Nation-wide service. And a complete, demonstrated Plan of Operation, which makes any Civic Safety Clinic self-supporting and self-liquidating. Write or wire for details.

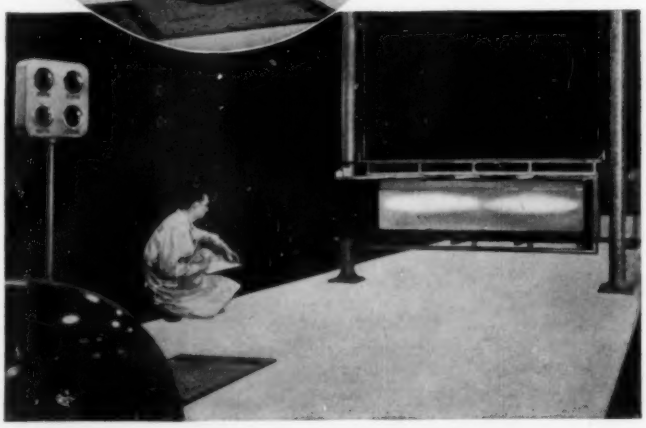
BENDIX PRODUCTS CORPORATION
(Subsidiary of Bendix Aviation Corporation)
401 BENDIX DRIVE, SOUTH BEND, INDIANA



Above: Tests each brake separately—by full wheel revolution under electric power . . . shows total stopping ability . . . shows up "out-of-round" drums. . . . TESTS TRACTOR AND TRAILER TRAINS.

Left: Tests wheel alignment, caster, camber, toe-in, entire steering geometry, precisely, quickly, easily.

Below: Tests headlights for focus, level, intensity . . . on a screen . . . in daylight!



New BENDIX *Civic Safety Clinic*

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401 Bendix Drive, Dept. A-12, South Bend, Ind.

Send me at once full details about Civic Safety Clinic Equipment, prices, operating plan, etc.

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what is wrong in traffic than the accidents that occur there, and the law should be designed to provide reports of all accidents involving death, personal injury, or apparent total property damage of $25 or more.

A Traffic Planning Division would be recommended in the state highway or other appropriate department. Its purpose would be to determine what restrictions and regulations of traffic are necessary and what equipment is needed, and to recommend these requirements to the appropriate departments for enactment, execution, and enforcement. The work of this division should result in a plan of reasonable and appropriate restrictions and aids to which the public will largely respond voluntarily and which can be effectively enforced.

Conformance with national standards in legislation would be recommended. The Uniform Act Regulating Traffic on Highways, Act V of the Uniform Vehicle Code, would be the model for such legislation, on which action should be taken at the first session of the legislature, after examining this act for any necessary modifications to make it conform with the state constitution and with legal procedure.

R. L. Morrison
Professor of Highway Engineering and Transport, University of Michigan, Ann Arbor, Mich.

Installation of a standard accident reporting system, covering the entire state, with copies of each report sent by the local authorities to a central state office. It is difficult to reduce accidents in particular locations unless the detailed causes of the accidents are known, and this is impossible without complete and definite reports.

Periodical inspections of motor vehicles. Poor brakes and other defects in vehicles cause many accidents.

The establishment of a State Bureau of Traffic Engineering with authority to erect, remove, and otherwise regulate all traffic control devices on state highways, and the adoption by this division of the regulations set forth in the Manual on Uniform Traffic Control Devices for Streets and Highways (U. S. Bureau of Public Roads).

Enactment of the Uniform Act Regulating Traffic on Highways. In the first place, this Act embodies those regulations which wide experience has shown to be most effective in preventing accidents. In the second place, the adoption by all states of uniform traffic laws would eliminate accidents due to the confusion of tourists by conflicting laws in different states.

Colonel A. B. Barber
Director, National Conference on Street and Highway Safety, Department of Commerce, Washington, D. C.

A modern system of accident records as recommended by the National Safety Council should be used as the basis of accident prevention efforts. Proper use of accident records removes guesswork and uncertainty and furnishes the essential basis for progressive improvement of conditions.

There is special need for establishment of effective traffic engineering service in each state or community to suit its size and intensity of traffic.

The five Acts of the Uniform Vehicle Code should be adopted by all states, the Model Traffic Ordinances by all municipalities and the Manual of Uniform Traffic Control Devices by the proper state and municipal authorities. These standards represent the consensus of the experienced judgment included in the membership of the Conference and afford the best basis available for dealing with the traffic problem.

E. W. James
Chief, Division of Highway Transport, U. S. Bureau of Public Roads, Washington, D. C.

Divided roadways effectively prevent head-on collisions and minimize dangerous cutting in and out of line. Accident records for divided highways as compared with other types show a definite advantage for the former. Separation of grades at intersections removes the opportunity for collision where vehicular paths cross. The elimination of highway-with-railroad grade crossings by the construction of bridges and underpasses has been a familiar procedure for many years. Now, with increasing speed and numbers of vehicles, the same treatment of major highway intersections has become necessary. Incidentally, grade separations, like many other features of highway improvement, are not only needed in the interest of safety, but are also the means of greatly expediting the movement of traffic. The provision of wide and firm shoulders adjacent to the paved roadway will accommodate parked or disabled vehicles outside the path of moving traffic, and thus separate moving and stationary vehicles. The number of rear-end collisions with standing vehicles, especially at night, is notorious. Adequate shoulders will also permit a safer maneuvering of vehicles in case of emergency. In addition to the separation of differing traffic movements, or pending its accomplishment, other highway improvements are urgent. The increasing of sight distances on both vertical and horizontal curves, and at intersections, will reduce the dangers of unexpected conflict. The super-elevation or banking of curves will facilitate the movement of all vehicles in their proper lanes and assist them in staying on the road.

All these improvements, however, will be largely nullified as far as safety is concerned if they are only made the excuse for faster driving. The trend to higher and yet higher automobile speeds must be checked if we are ever to enjoy the use of our highways in reasonable safety.

Captain Lawrence A. Lyon
Superintendent, Uniform Division, Michigan State Police, Lansing, Mich.

Local and state authorities having jurisdiction over highways should make every effort to clear the property bounding the highways of objects that unnecessarily engage the eyes of motorists. Foliage of trees should be raised as much as possible, shrubs should be trimmed; advertising signs should be removed. Efforts should be made to make as many open spaces as possible.

Don't Overlook the Pedestrian

MUCH rightly is made of the need for a sound driver in a sound car; but what is to be done when the pedestrian is at fault, as he is half the time? "Sooner or later," writes M. O. Eldridge, Assistant Director of Traffic, Washington, D. C., *in Columbus Today*, "definite regulations will have to be adopted which will make it illegal for pedestrians to cross the street in the middle of the block or to cross at uncontrolled intersections against the signal." Doing these two things accounts for 58 per cent of the Capital's pedestrian fatalities.

Acme Photograph

BLINDING HEADLIGHTS OF AN APPROACHING CAR CAUSED THIS ACCIDENT

THE GIFT OF FRIENDSHIP

THERE is a priceless gift within reach of every one—the gift of friendship.

Of all the services of the telephone there is none more important than this—helping you to make friends and to keep them.

When people are in trouble, you go to them quickly by telephone. The telephone carries your good wishes on birthdays, weddings and anniversaries. Arranges a golf game or gets a fourth for bridge. Invites a business acquaintance to your home for dinner, and advises "home" that he is coming. Congratulates a youngster on his work at school. Thanks a neighbor or asks about the baby. Renews old times—shares confidences—plans for the future.

Thus the bonds of friendship are formed and strengthened. Greater happiness comes into the widening circle of your life. Some one, somewhere, says sincerely—"It was nice of you to call." This day, a voice-visit by telephone may bring reassurance to some friend who is wondering how you are.

More and more are people turning to Long Distance to carry friendly voices across the miles. They like its speed, clarity, intimacy and low cost—especially after 7 P.M., when calls by number to most points cost about 40% less than in the daytime.

BELL TELEPHONE SYSTEM

Mention THE AMERICAN CITY—it helps.

Water Rates and Service Charges, Installation Charges, Hydrant Rentals and Sprinkler Costs—XX

Abstracts of Water Department and Company Reports

Salem, Mass.

Population	43,353
" served	43,000
Number of services	7,168
" " meters	5,956
" " hydrants	759
Miles of water main	81.9

A uniform rate of 15c per 100 cu. ft. is charged for all water delivered through metered services within the corporate limits of the city of Salem. The minimum rates for metered water for each quarter are as follows:

¾" meter (or less)	$ 2.50
1" "	3 50
1½" "	5 00
2" "	6 50
3" "	10 00
4" "	20 00
6" "	40 00

Applications for the use of water must be made at the office of the Water Board, and the various uses to which the water is to be applied must be stated fully. All applicants for whom a service pipe is laid are charged not less than $3.00 annually whether the water is used or not, until such time as the city is reimbursed in full for the expense of laying the pipe. All water takers must keep the service pipe and fixtures within their premises in good repair and protected from frost. Water may be cut off from any premises, notwithstanding two or more parties may receive the water through the same pipe, for any violation of the Water Board regulations, and the water is not turned on again except on payment of $2.00 and all chargeable rates.

FRANK P. MORSE,
City Engineer.

Anderson, Ind.

Population	40,000
" served	50,000
Number of services	10,265
" " meters	8,000
" " hydrants	518
Miles of water main	87.0

The rates for metered service, effective October 1, 1926, are as follows:

Up to	7,500 gals.		24c	per 1,000 gals.
" "	22,500	"	21c	" " "
" "	45,000	"	18c	" " "
" "	90,000	"	16c	" " "
" "	500,000	"	13c	" " "
" "	1,000,000	"	12c	" " "
" "	2,000,000	"	10c	" " "
All over	2,000,000	"	9c	" " "

Contractors using water for building purposes pay a meter rate of 25c per 1,000 gals.

The monthly minimum meter charges are as follows:

½" or ⅝" meter	$ 1 25
¾" "	1 25
1" "	2 25
1½" "	3.75
2" "	5 25
3" "	8 25
4" "	10 50
6" "	15 00

The city pays $35 a year for each fire hydrant connected to the main, and $20 per year for each flush tank for sewers. The rate for public drinking fountains is $25 for each outlet.

The rates for private fire protection are $28.75 for a 2½" or 3" line, $85.00 for a 3" line or larger, and $57.50 each for private fire hydrants.

W. J. NORTON,
Superintendent, Anderson Water Works.

Reno, Nev., and Sparks, Nev.

Population	23,000
" served	23,000
Number of services	5,780
" " meters	Large consumers only
" " hydrants	274
Miles of water main	89.3

The meter rate for large water consumers is $500 as a minimum monthly charge, covering the use of 25,000,000 gallons of water per month. For all consumption in excess of 25,000,000 gallons per month, a charge of 2c per 1,000 gals. is added to the minimum charge. All domestic services are on flat rates.

A customer desiring water service installs a single service pipe for each building to be served, from the building to the curb line on an adjacent street where a water main is located. The water company then installs at its own expense a connection from each service pipe to the main.

The charges for public fire hydrants for fire protection are:

Fire hydrants owned by city of Reno	$5 00 per mo. per hydrant
" " " " " " Sparks	2 00 " " " "
All fire hydrants privately owned	5 00 " " " "

H. P. DAYTON,
Treasurer, Sierra Pacific Power Co.,
Reno, Nev.

Logan, Utah

Population	10,500
" served	10,000
Number of services	2,650
" " meters	915
" " hydrants	163
Miles of water main	30.0

Water consumers in Logan City are billed three times a year. The water rates are:

First	50,000 gals.	@	11c	per 1,000 gals.
Next	250,000 "	@	10c	" " "
"	200,000 "	@	9c	" " "
"	500,000 "	@	7c	" " "
Over	1,000,000 "	@	6c	" " "

Minimum charge $1.10 per month for 10,000 gals. or less.

A discount of 10% is allowed on the current charge for water consumed during the four months prior to the month in which the bill is made, provided the account is paid in full within 10 days from the date of the bill. The net billing, or minimum bill, must not be less than $1.00 per month.

GEORGE MICKELSEN,
Superintendent of Water Department,
Logan City Corporation.

High Point, N. C.

Population	42,500
" served	35,000
Number of services	5,911
" " meters	5,911
" " hydrants	906
Miles of water main	85

The water rates for metered service, effective July, 1933, are as follows:

First 400 cu. ft.			.2475
400 to	1,300 cu. ft.		.2233
1,300 "	2,600 " "		.2068
2,600 "	4,000 " "		.1815
4,000 "	5,300 " "		.1650
5,300 "	6,600 " "		.1485
6,600 "	13,300 " "		.1243
13,300 "	26,600 " "		.1067
26,600 "	40,000 " "		.0990
40,000 "	66,600 " "		.0907
66,600 "	150,000 " "		.0825

The charges for the installation of services are $17.50 for a water meter and $17.50 for a water tap, plus the labor for installation. There are no hydrant rentals.

J. L. PERKINS,
Director, Public Utilities.

Water Rates Series Concluded in This Issue

The detailed Water Rates of a large number of American cities have been published in THE AMERICAN CITY serially from May, 1934, to date, and in the 1934-35 Municipal Index. The 1934 material has already been reprinted; the 1935 series reprint will be available early in January.

"RCA Terra-Wave Radio System— a great help in policing the city"

—*Columbia, S. C., Chief of Police*

Mr. W. H. Rawlinson, Chief of Police, Columbia, S. C., at the microphone of his RCA Terra-Wave Police Radio Transmitter

DEPARTMENT OF POLICE
COMMISSION FORM OF GOVERNMENT

COLUMBIA
South Carolina

February 22, 1935

Mr. J. J. Clancy,
Captain of Police,
Savannah, Georgia.

Dear Sir:

In reply to your letter of the 20th, relative to our RCA Terra Wave Radio System, I wish to advise that it has been in operation approximately 30 days and it has proven very satisfactory and a great help in policing the city. The city of Columbia has an area of 9 square miles. On tests we have been able to pick up messages very distinctly 15 to 20 miles from the city.

We have at present six automobiles equipped with receiving sets and hope to add more within the near future. Since its installation, we are at a loss to understand how we got along without it before. As an example of its efficiency; about 3:00 o'clock yesterday morning, a report came in that an automobile had been stolen in the city. Word at once was dispatched to the cars by the operator and from time to time reports came into the office that the car had been seen at different locations, which information was passed on to the patrol cars and within two hours from the time report first reached us, the car had been recovered and with it a store robbery cleared and goods recovered. Arrests have increased considerably since its installation.

I trust that your department will see fit to install one of these systems and I am sure you will be well pleased with the results. If I can be of further service to you, please advise.

Yours very truly,

W. H. Rawlinson
Chief of Police

ACW/t

THIS letter is typical of many written by police chiefs in all parts of the country. Radio today is an essential to effective police work. Be sure it is RCA Terra-Wave, the remarkable system that uses ground waves only, thus preventing interference with other transmitters, and greatly lessening the effects of static. Reliable communication through thunderstorms is the rule rather than the exception.

2-Way Communication Added

Since Chief Rawlinson wrote his letter, we have added 2-Way Communication, offering the new Mobile Transmitter for scout cars. Now these cars can communicate instantly with headquarters, reporting direction from the scene. This new development much more than doubles the efficiency of the department. No longer need it be necessary for motorized officers to find a telephone in order to give the chief an emergency report; they close a switch and talk by radio, without stopping their car! This compact, rugged, low-cost equipment is a product of the RCA laboratories, embodying the unique RCA experience in building transmitters for broadcasting stations, for the Army and Navy, for ships and airplanes. No wonder it performs so astoundingly! It is the most sensational contribution to crime control since RCA Terra-Wave itself was first introduced. Criminals today are learning to flee the town that uses RCA Terra-Wave Police Radio.

Sales and Service Representatives in Principal Cities

RCA TERRA-WAVE POLICE RADIO SYSTEM

RCA MANUFACTURING COMPANY, INC.—CAMDEN, NEW JERSEY

A Radio Corporation of America Subsidiary

Hagerstown, Md.

Population	32,000
" served	35,000
Number of services	8,000
" " meters	6,000
" " hydrants	338
Miles of water main	86.0

All water furnished domestic or other consumers in excess of the allowances for the respective classification charges is billed according to the following sliding schedule:

DOMESTIC ALLOWANCE, 8,333 GALLONS QUARTERLY

Over 8,000 to	11,000	30c per 1,000 gals.
11,000 "	14,000	29c " " "
14,000 "	19,000	28c " " "
19,000 "	24,000	27c " " "
24,000 "	28,000	26c " " "
28,000 "	43,000	25c " " "
43,000 "	48,000	24c " " "
48,000 "	56,000	23c " " "
57,000 "	65,000	22c " " "
70,000 "	80,000	22c " " "
80,000 "	100,000	21c " " "
100,000 "	140,000	20c " " "
140,000 "	160,000	19c " " "
160,000 "	250,000	18c " " "
250,000 "	300,000	17c " " "
300,000 "	600,000	16c " " "
600,000 "	900,000	14c " " "
900,000 "	1,100,000	13c " " "
1,150,000 "	2,000,000	12c " " "
2,000,000 "	4,000,000	11c " " "
4,000,000 "	6,000,000	10c " " "
6,000,000 "	8,000,000	9c " " "
All over	10,000,000	8c " " "

MUNICIPAL AND MANUFACTURING OR MONTHLY ALLOWANCE, 2,778 GALLONS MONTHLY

Over 2,778 to	4,000	30c per 1,000 gals.
4,000 "	5,000	29c " " "
5,000 "	6,000	28c " " "
6,000 "	7,000	28c " " "
7,000 "	8,000	27c " " "
8,000 "	9,000	27c " " "
9,000 "	10,000	26c " " "
10,000 "	12,000	26c " " "
12,000 "	14,000	25c " " "
14,000 "	16,000	24c " " "
16,000 "	18,000	24c " " "
18,000 "	28,000	23c " " "
28,000 "	35,000	22c " " "
35,000 "	48,000	21c " " "
48,000 "	50,000	20c " " "
50,000 "	85,000	19c " " "
85,000 "	100,000	18c " " "
100,000 "	200,000	17c " " "
200,000 "	300,000	16c " " "
300,000 "	400,000	15c " " "
400,000 "	500,000	14c " " "
500,000 "	650,000	13c " " "
650,000 "	1,000,000	12c " " "
1,000,000 "	1,500,000	11c " " "
1,500,000 "	2,500,000	10c " " "
2,500,000 "	5,000,000	10c " " "
5,000,000 "	8,000,000	9c " " "
All over	10,000,000	8c " " "

Service connections from the main pipe to the curb are installed by the Water Department at the expense of the owner and are the property of the owner. The charges made by the Water Department are payable in advance and are as follows:

For house service, for tapping main, including stop in main, stop cock and box at curb; with an additional charge of 20c per foot for pipe from main to curb: single connection at curb, for single house, $7.00; double connection at curb, for double house, $12.00; triple connection at curb, for triple house, $17.00. Digging of trench to be done at expense of owner.

For service pipe, up to 2", for larger buildings, a charge of $10.00 will be made for tapping, with an additional 25c per foot for pipe from main to curb.

Service pipes larger than 2" are considered fire protection service, the size of which is determined by the Water Department, and the charge for same is the actual cost price of material and labor, with an addition of 10% for the use of tools and supervision.

Bills for water service are due and payable when rendered; a failure to pay within 20 days is considered in arrears, and a penalty of 5% of the amount of the bill is added. If the bill is not paid before the next 30 days, the water is turned off at the curb without notice and is not turned on again until all arrears have been paid with an additional charge of $1.00.

No rental is charged for public fire hydrants. The rate for private fire protection, sprinkler systems or standpipes is $50 each per year. This rate was established by the private company which constructed the system in 1881 and has been continued under city ownership since 1918. The water rates do not meet the interest charges and operation costs of the system. The city appropriates a small amount from taxes toward interest.

ALBERT HEARD,
Superintendent and Secretary, Board of Water Commissioners.

Grand Forks, N. Dak.

Population	18,000
" served	17,500
Number of services	3,592
" " meters	3,202
" " hydrants	347
Miles of water main	36.9

The meter rates in Grand Forks, N. Dak., have been in effect since January 9, 1919, as follows:

1st	1,000 gals. or fraction thereof	50c
Next	4,000	40c per 1,000 gals
2nd	5,000	35c " " "
2nd	10,000	30c " " "
3rd	10,000	28c " " "
4th	10,000	25c " " "
5th	10,000	20c " " "
2nd	50,000	15c " " "
2nd	100,000 and over	12c " " "

All water rates are due on the first of the month, with a 5% penalty added if the bill is unpaid on the 15th. Water is shut off if the bill is not paid by the 20th, and the water is not turned on again until all arrears plus $1.00 are paid.

Services and meters are installed by the property owner at his expense. A permit for the installation is issued by the Water Department to licensed plumbers. Meters are repaired by the Water Department and the cost billed to the owner.

There is no charge for public fire hydrants used by the city either for fires or for street sprinkling. The private use of public hydrants is permitted when the water is metered, and a charge is made at the regular rate plus a service charge of $1.50 for installing and removing the meter.

R. M. JENSON,
Superintendent of Water Works.

Phoenix, Ariz.

Population	55,000
" served	65,000
Number of services	12,066
" " meters	5,793
" " hydrants	833
Miles of water main	202.0

The water rates for services within the corporate limits of Phoenix for water used in excess of the minimum allowed are:

8.4c	per 100 cu. ft. for first	66,666 cu. ft.
6.75c	" " " " second	66,666 " "
5.4c	" " " " third	66,666 " "
4.72c	" " " " fourth	66,666 " "
4.05c	" " " " all over	266,664 " "

The minimum amount of water allowed and the monthly minimum rate based on the size of the meter are:

Size of Meter	Minimum Allowed	Monthly Rate
⅝"	2,083 cu. ft.	$1.75
¾"	2,381 " "	2.00
1"	2,679 " "	2.25
1½"	3,274 " "	2.75
2"	3,869 " "	3.25

The rates outside of the city are:

15c	per 100 cu. ft. for first	66,666 cu. ft.
13¼c	" " " " second	66,666 " "
11½c	" " " " third	66,666 " "
10¾c	" " " " fourth	66,666 " "
10½c	" " " " all over	266,664 " "

The minimum monthly rates, based on the size of the meter, for services outside of the city, are:

Size of Meter	Minimum Allowed	Monthly Rate
⅝"	1,667 cu. ft.	$2.50
¾"	1,833 " "	2.75
1"	2,000 " "	3.00
1½"	2,333 " "	3.50
2"	2,667 " "	4.00

The charges for installing services are as follows:

⅝" x ¾"	$20.00
1"	35.00
1½"	65.00
2"	100.00
Over 2"	Cost job

No charge for pavement cuts.
Above prices applicable inside and outside city limits.

There are no hydrant-rental charges in the city of Phoenix, this service being absorbed in the Water Department budget. Fire lines inside buildings are charged at a flat rate of 75c per inch diameter of pipe per month.

C. E. GRIGGS,
City Engineer and Superintendent of Water Department.

Death Retreats where He Patrols

Officer Fred Voide,
Bear Mountain, N.Y.

CARELESS, reckless drivers who disregard traffic laws are cutting a wide path of grief, suffering and death! The toll is terrific—yet there is a note of hope. As the records pour in, one fact stands out. Where well-equipped motorcycle patrols are in action—there accident totals are cut down—and death is forced to beat a retreat.

Yes, where officials make fullest use of their man-power by adding the fleetness, flexibility, efficiency, and economy of modern motorcycles, the records show more complete and effective traffic control—whether in congested metropolitan areas or in the open country.

It is particularly significant, in view of the splendid records made by those enforcement departments using motorcycles, that the majority of them have standardized on Harley-Davidson Police Motorcycles!

See your nearby Harley-Davidson dealer or write for special Police literature.

HARLEY-DAVIDSON MOTOR COMPANY
Dept. M, Milwaukee, Wisconsin

New radio-equipped Harley-Davidsons,
Austin Police Dept., Austin, Texas

HARLEY-DAVIDSON
The Police Motorcycle

Selma, Ala.

Population	20,000
" served	18,000
Number of services	3,600
" " meters	3,600
" " hydrants	376
Miles of water main	41.0

The schedule of meter rates for Selma, Ala., is as follows:

	Gross Rate	Net Rate
2,500 gals. per day or less	33¾c per 1,000	22½c per 1,000
2,500 to 5,000 gals. per day	27c " "	18c " "
5,000 " 10,000 " " "	21c " "	14c " "
10,000 " 20,000 " " "	15c " "	10c " "
Over 20,000 " " "	9c " "	6c " "

The minimum charge per quarter is $3.37 (less the standard discount of 33 1/3% if paid by the 10th) making the net charge per quarter $2.25 (75c per month, 2½c per day). For the net minimum bill of $2.25, a consumer is entitled to 10,000 gals. of water.

A discount of 33 1/3% is allowed from all gross amounts of bills if paid by the 10th of the month following service. This reduces the bill to the net rates listed. Bills must be paid by the 10th of the month to receive the benefit of this discount.

All consumers are required to make a deposit payable in advance. For a residence for a family, a deposit of $4.50 is required. For a place of business, the amount depends on the business and the amount of water consumed. For tenant houses where two houses are on one meter, the minimum bill is $3.37 less 33½% if paid by the 10th, making the minimum bill $2.25 per quarter. When more than two houses are on one meter, the minimum bill per quarter is $1.50 for each house, less 33 1/3%, making the net minimum bill per quarter $1.00 for each house. The deposits which are required are: one to three houses, $4.50; four to six houses, $9.00; seven to nine houses, $13.50; ten to twelve houses, $18.00. When more than one house is furnished by one meter, the deposit and account must be in the name of the owner of the property.

The Selma Water Works makes all taps for connections to mains. For a tap of ¾", the charge is $6.00, and for a 1" tap, the charge is $7.50. The water works furnishes the corporation cock and gooseneck. Where no corporation cock or gooseneck is furnished, the charge for a ¾" tap is $4.00, and for a 1" tap, $5.00. For a connection to a 2" main, the charge is $4.00. For larger connections, the charge is made according to the condition and location. Where streets are paved, lead or copper pipe is required from the main to inside the curb.

The charges for private fire hydrants are as follows:

	Gross Rate	Net Rate
2½" 2-way fire hydrants	$76.50	$45.00
1¼" to 1½" fire hydrants	15.00	10.00
3-way steamer hydrants	101.25	67.50
Where one customer has three or more hydrants:		
2½" 2-way hydrants	50.00	33.34
3-way steamer hydrants	76.00	50.67

The gross rate carries a discount of 33 1/3% if paid by the 10th of the month.

The charges for automatic sprinklers are 7½c for each sprinkler head per year, less a 33 1/3% discount if paid by the 10th of the month (making the net charge 5c per year). The minimum charge is $36.00 per year (less 33 1/3% if paid by the 10th), making the net charge per year $24.00.

A. THALHEIMER,
Chairman, Water Works Commission.

Port Angeles, Wash.

Population	10,000
" served	10,500
Number of services	3,000
" " meters	75
" " hydrants	105
Miles of water main	93.0

Meters are read and billed each month to consumers on metered services in Port Angeles as follows:

First	300		$1.75 for the 300 cu. ft. or less
Next	2,000	@	.25 per 100 cu. ft.
"	1,200	@	.20 " " " "
"	1,500	@	.13 " " " "
"	20,000	@	.10 " " " "
"	50,000	@	.08 " " " "
"	25,000	@	.07 " " " "
"	25,000	@	.05 " " " "
All over	125,000	@	.03 " " " "

MINIMUM CHARGES

½" meter	$ 1.75
¾" "	1.90
1" "	3.15
1½" "	3.75
2" "	6.25
3" "	12.50
4" "	18.75
6" "	37.50

The bills are payable on the first day of each month following the reading date. They are delinquent on the 15th, and if the bill is not paid by the 21st of each month, the service is cut off without notice. A 5% discount is allowed on the water bill if paid by the 15th of the month. Where premises are vacant and no water is used through a meter in a month, a charge of 50c per month is made, provided that where two or more separate buildings are supplied by the same meter, the minimum rate is $1.35 per month for each building. Where meters are installed for a temporary supply, the minimum monthly charge is $2.00. Most residences are on flat rates.

Applications for water service must be made on special forms furnished by the Water Superintendent. Each application must be made by the owner of the property to be benefited or by his authorized agent. Bills for water service are rendered to the owner of the property or, at his request, to the tenant. The fee for the installation of a water service varies according to the size of the service as follows:

¾" connection	$12.00
1" "	14.00

For sizes larger than 1" or where it is necessary to open a paved street, the actual cost of labor and materials in laying such a service and replacing the pavement is charged. In such cases and where connections extend along a street on which there is no main, the cost of material and labor is estimated by the Superintendent and must be paid by the person applying for the service before work is started, with proper adjustment in case the actual cost is more or less. No service smaller than ¾" is installed.

The City Current Expense Fund pays the following for fire-hydrant service for the city: for each fire hydrant per month, $3.00; for each flush tank for sewer flushing per month, $1.50. All other water used by the city is charged at the same rate as charged to private consumers.

The minimum monthly rates for private fire-service connections are: each 2" fire service, $2.00 per month; each 4" fire service, $5.00 per month.

S. H. WHITE,
Superintendent of Utilities, Port Angeles Water System.

St. Louis, Mo.

Population	830,000
" served	830,000
Number of services	134,000
" " meters	14,000
" " hydrants	14,820
Miles of water main	1,210.0

The metered water rates established by Ordinance 32,650, November 7, 1923, are as follows, based on six months' use, with no bill issued for less than $1.00:

First	3,000	cu. ft. or less	15c
Next	3,000	" " " fraction thereof	14c
"	4,000	" " " "	13c
"	5,000	" " " "	12c
"	10,000	" " " "	11c
"	15,000	" " " "	10c
"	100,000	" " " "	9c
"	260,000	" " " "	8c
"	3,600,000	" " " "	7c
"	4,000,000	" " " "	6½c
"	10,000,000	" " " "	6c
All over	10,000,000	" "	5c

The special meter rates for the use of water for purely manufacturing purposes is as follows, but this schedule does not apply to users of less than 60,000 cu. ft. during the six-months period. If a manufacturer does not use 60,000 cu. ft. during a six-months period, he is charged for the full 60,000 cu. ft. at the manufacturing rate unless he elects to pay for the actual quantity of water used at the general meter rate, in which case he is assessed at the general meter rate for the water used thereafter until a new application is made for the manufacturing rates. The manufacturing rates are:

First	60,000	cu. ft.	10c
Next	440,000	" "	6c
"	500,000	" "	5½c
All over	1,000,000	" "	5c

Hospitals and charitable institutions are given a special charity rate where free service is furnished to not less than 10% of its patients or inmates. This special rate is 4½c per 100 cu. ft. Public schools are assessed 6c per 100 cu. ft. for water consumed.

There are no hydrant rentals charged to the city. There is, however, a $5 charge for private fire hydrants per year, and a service charge of $5 per year for private sprinkling connections.

C. M. DAILY,
Water Commissioner.

L.F.C.

HIGHEST QUALITY CASTINGS *PLUS*

60x42x42

QUICK DELIVERIES

—spell economy on any job!—For more than 50 years "Lynchburg" has been famed for it's high quality castings, and it's unusually quick deliveries—Many so-called "Specials" in other foundries are every day routine at "Lynchburg."—"Lynchburg Service" insures you against expensive delays.

Bell and Spigot Pipe and Fittings From 4" to 54"
Cast Iron Flanged Pipe From 3" to 84"
Cast Iron Flanged Fittings and Flanges from 1" to 84"
de Lavaud Centrifugal Cast-Iron Pipe

LYNCHBURG FOUNDRY COMPANY

General Office, LYNCHBURG, VA.

Peoples Gas Bldg., Chicago, Ill. **50 Broad St. New York, N. Y.**

Automatic Starting Eliminates Attendant

This set operates automatically on failure of electric current, supplying the power required during all emergency periods.

The automatic feature reduces the cost of maintenance and is faster and more dependable than manual starting.

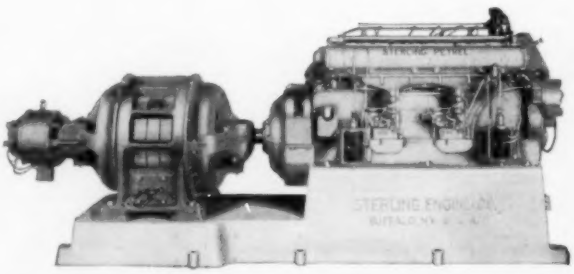
Sterling High Duty

Sterling — The Engine of Refinement

Internal Combustion Engines

Gas—Gasoline—Diesel Oil Engines

Automatic equipment defrays its cost in one year of operation.



The Highlandtown Pumping Station, Baltimore, Md., employs a Sterling Petrol 6-cylinder 115-Hp. engine driving a 60-Kw. 240-volt General Electric generator, 1200 RPM.

STERLING ENGINE COMPANY

Home Office and Plant
1270 Niagara St., BUFFALO, N. Y. Dept. C-11

Branch Office
900 Chrysler Bldg., NEW YORK, N. Y.

Bend, Ore.

Population	8,848
" served	9,500
Number of services	2,459
" " meters	207
" " hydrants	104
Miles of water main	58.0

The water rates for metered services in Bend, Ore., are:

First	200 cu. ft. or less used per mo.	$1.60
Next	300 " " used per mo.	.25
"	1,500 " " " " "	.11
"	1,800 " " " " "	.08
Excess over	10,000 " " " " "	.06

Fire hydrant rentals are $2.50 per hydrant per month. The flat-rate charge for fire protection connections is 60c per inch diameter of connection to the distribution main with no charge less than 90c per month.

W. P. Drost,
Water Superintendent.

Harrisburg, Pa.

Population	80,500
" served	80,500
Number of services	24,700
" " meters	19,000
" " hydrants	1,420
Miles of water main	125

The rate for water actually used is 3c for each 1,000 cu. ft. All meters for measuring water for domestic purposes are read and bills rendered semi-annually, and all meters measuring water for other purposes are read and bills rendered quarterly or monthly. All bills for metered water are due and payable on presentation. If not paid within 60 days after the date of the bill, the water is shut off without further notice and a penalty of 2% added and 1% additional each month thereafter. When water is shut off for non-payment, it is not turned on again until $1.00 in addition to all arrears and fines has been paid to the City Treasurer. The Bureau of Water charges rent for a meter owned by the city whenever the water user does not require continuous service and prefers to use water from other sources occasionally.

The ready-to-serve annual charges for water service are based on the sizes of meters as follows:

½" and ⅝"	$ 4.00
¾"	5.00
1"	10.00
1¼"	15.00
1½"	22.00
2"	40.00
3"	90.00
4"	160.00
6"	360.00
8"	640.00
10"	1,000.00
12"	1,440.00

Meters are installed by the Bureau of Water of the Department of Public Safety at the owner's expense. In addition to the "ready-to-serve" charge listed above, the rate for water actually consumed for all purposes is 43 cents per 1,000 cubic feet; provided, however:

"(a) That where more than one house is served by one meter, a 'ready-to-serve' charge of not less than $4.00 per house shall be charged against each of said houses.

"(b) That a credit of the 'ready-to-serve' charge for the meter in use shall be given to the aggregate amount charged for all of said houses.

"(c) That in the case of the use of a meter serving more than one house the 'ready-to-serve' charge of which meter should exceed the aggregate of 'ready-to-serve' charges for all of the houses as aforesaid, the preceding provisions shall not apply.

"(d) The 'ready-to-serve' charge for a meter installed after the beginning of the water year shall be pro-rated."

William T. DeHart,
Director of Public Safety.

Modesto, Calif.

Population	16,000
" served	16,000
Number of services	4,570
" " meters	531
" " hydrants	341
Miles of water main	53.06

The water rates for metered services in Modesto are as follows:

First	3,000 cu. ft.	90c per 1,000 cu' ft.
Next	30,000 " "	75c " " " "
All over	33,000 " "	70c " " " "

The following miminum rates are charged each month, permitting the use of water given in the last column without additional charge:

		Cu. Ft. for Min. Rate
⅝" meter	$1.00	1,111
¾" "	1.50	1,667
1" "	2.00	2,222
1¼" "	2.50	2,778
1½" "	2.50	2,778
2" "	3.00	3,400
3" "	4.00	4,773
4" "	5.50	6,733
6" "	8.00	10,067
8" "	10.00	12,733

The city of Modesto furnishes the service complete from the main to the property line in the case of an alley, and to the curb line if the service is from a street main. For a metered service, the city furnishes all meters from ⅝" to 2" inclusive, but if a meter larger than 2" is required, it must be of a type approved by the Superintendent and must be paid for by the consumer, and installed at his own expense including a meter box and a seal cover. Consumers on metered services must pay their bills by the 10th of the month following the date of the bill, or a 10% penalty is added. If the bill is not paid by the 30th of the month following the date of the bill, the service may be discontinued and will not be resumed until the delinquent charge is paid plus a charge of $1.00 for disconnecting and reconnecting.

M. H. Crews,
Assistant City Engineer.

Great Falls, Mont.

Population	33,000
" served	36,000
Number of services	7,200
" " meters	750
" " hydrants	605
Miles of water main	83.0

The meter rates in Great Falls are as follows:

First	1,000 cu. ft.	@ 25c per 100 cu. ft.
Next	6,000 " "	@ 20c " " " "
"	3,000 " "	@ 15c " " " "
"	90,000 " "	@ 13c " " " "
"	40,000 " "	@ 12c " " " "
"	40,000 " "	@ 11c " " " "
"	70,000 " "	@ 10c " " " "
All over		9c " " " "

Minimum meter charges per month based on the size of the meter are:

¾"	$1.50
⅝"	1.50
1"	2.00
1½"	3.00
2"	4.00
3"	6.00
4"	10.00

A discount of 10% is allowed on bills paid by the 10th of the month.

Sam Bernhardt,
Registrar, Water Department.

Rockford, Ill.

Population	85,864
" served	85,864
Number of services	20,778
" " meters	18,103
" " hydrants	1,482
Miles of water main	200.1

For all water used in excess of the amount allowed in the quarterly minimum charges, the rate is 7c per 100 cu. ft. The quarterly minimum charges for the different size meters and the amount of water allowed for the minimum charge are:

Size of Meter	Amount of Water allowed with Quarterly Minimum Charge	Quarterly Minimum
⅝"	700 cu. ft. or less	$2.25
¾"	1,125 " " " "	4.05
1"	2,000 " " " "	7.20
1½"	2,500 " " " "	9.00
2"	4,000 " " " "	14.40
3"	5,000 " " " "	18.00
4"	10,000 " " " "	36.00
6"	15,000 " " " "	54.00

Applications for water service must be made at the office of the Water Department, accompanied by a deposit to pay in advance the cost of the installation from the water main in the street to the property line, based on the cost as determined by the Superintendent of the Water Department.

All water bills paid within the first 10 days after they are due are entitled to a discount of 5%, and all water bills not paid within the first 10 days are delinquent and so remain until 20 days after the due date, whereupon the city water supply is shut off from the property and is not turned on again until the water bill plus a turn-on fee of $1.00 is paid.

Sprinkler and fire protection service are installed when a petition is granted by the City Council, the entire cost being billed to the property. A quarterly minimum charge is made against all sprinkler and fire protection services, depending on the size of the service as follows:

2"	$8.00
3"	10.00
4"	20.00
6"	30.00
8"	60.00

H. S. Merz,
Superintendent, Water Department.

Do You Read Page 9?

Short items of great interest to all water-works men appear on page 9 of each issue of The American City.

. . . for

UNQUESTIONED ESTABLISHED PERFORMANCE

Golden-Anderson

"AUTOMATIC VALVES"

Fig. 32-A

Altitude Control—Automatic, air and water cushioned. These Valves will hold water in elevated storage at exact predetermined level. No floats, long connections or complicated fixtures needed. Operation is by static head. Places control in accessible position, and is unfailing in operation.

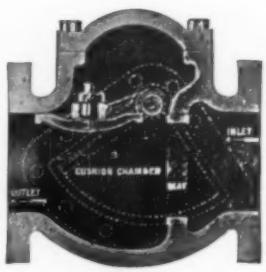


Fig. 25

Cushioned Check Valve

The balanced design and full area reduces water pumping costs 75%. Thoroughly cushioned to overcome water hammer or shock. May be furnished with hand lever control.

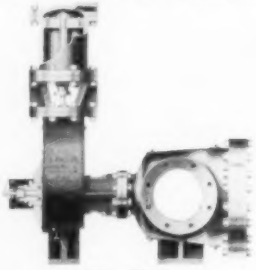


Fig. TG-1

Thru-Flow Cone Valves

Valve is always unseated axially, rotated without rub or friction and reseated axially in either position; all in one operating movement and drop tight in both open and closed positions. Automatic controls are available for operating the valve as an altitude control, check valve; reducing valve; relief valve, etc. Furnished in sizes 6 to 72 inches.

Fig. 74

Water Strainer

The most efficient strainer for insuring clean water for water works, railroads, industrial plants and processing service. Easy to clean and with large area. Heavy and extra heavy types.

GOLDEN-ANDERSON VALVE SPECIALTY CO.

1329 FULTON BLDG. PITTSBURGH, PA.

THE WILLIAM S. HEWETT SYSTEM of Reinforced Concrete Construction as applied to RESERVOIRS, TANKS and DOMES

Washburn Park Standpipe, Minneapolis Minn. Capacity 1,500,000 gallons

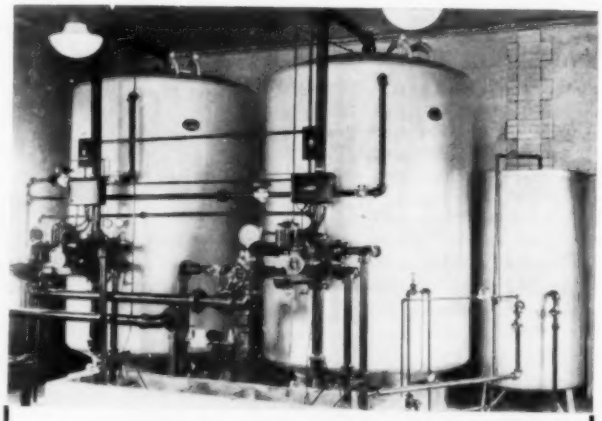
In the design of reinforced concrete structures for the storage of water Engineers have for years had difficulty with structures cracking due to shrinkage in the concrete and the elasticity of the steel reinforcing.

The William S. Hewett System solves these problems and results in perfectly logical, waterproof and economical structures. Our Bulletin "A" gives illustrations of structures built. Bulletin "B" discusses the theories upon which the system is based. Every designer should have this information before making up plans for any structure for the storage of liquids.

These structures are simple both in design and execution and can be built by local builders using local labor.

THE WILLIAM S. HEWETT SYSTEM

549 W. Washington St. CHICAGO, ILL.



Fully Automatic

ZEOLITE WATER SOFTENER

This is a photograph of the Permutit fully automatic water softener installed at Elmore, Ohio. It softens the entire municipal supply. Such plants offer a number of advantages: small space requirements, uninterrupted service, minimum of attendance, absence of sludge disposal problems. Write for your free copy of the leaflet, "Pressure Zeolite Water Softening at Elmore, Ohio." The Permutit Company, 330 W. 42nd St., New York, N. Y. *World's largest manufacturer of Water Conditioning Equipment.*

Permutit

Water Conditioning Equipment

El Paso, Texas

Population	102,421
" served	104,047
Number of services	16,287
" " meters	14,797
" " hydrants	659
Miles of water main	170.0

The following minimum charges and rates apply to all water users within the limits of El Paso:

Minimum Monthly Charge	
Meters under 1"	$1.00
1" meters	2.00
1½" "	3.00
2" "	5.00
3" "	7.50
4" "	10.00
6" "	20.00

The minimum monthly charge entitles the users to water in quantities as follows:

600 cu. ft., equal to 4,500 gals.	$1.00
1,200 " " " 9,000 "	2.00
1,800 " " " 13,500 "	3.00
3,000 " " " 22,500 "	5.00
4,500 " " " 33,750 "	7.50
6,000 " " " 45,000 "	10.00
12,000 " " " 90,000 "	20.00

For meters over 6" there is a minimum monthly charge of $20. This entitles the user to water consumption of 12,000 cu. ft.

For all water used in excess of the quantity allowed for the corresponding minimum monthly charge, the rate is 15c per 100 cu. ft. up to and including 26,600 cu. ft. The rates for larger quantities are as follows:

Next 26,600 cu. ft.	13c per 100 cu. ft.
" 26,600 " "	12c " " " "
" 53,200 " "	11½c " " " "
" 133,000 " "	10½c " " " "

The following monthly charges are made as "stand-by" charges for fire protection for any building or plant served from the city's main through a line intended solely for fire protection:

1" connection	$1.50
1½" "	1.75
2" "	2.50
3" "	3.50
4" "	5.00
6" "	8.00
8" "	12.00

If a sprinkler system is installed in a building, the following rates are charged in place of the charge in the table immediately above:

2" connection	$1.00
3" "	1.50
4" "	2.00
6" "	2.00
8" "	3.00

The city of El Paso is charged $50 per hydrant per year for all fire hydrants, and those hydrants in service for less than one year are charged a proportional amount.

Water furnished outside the city limits is subject to a minimum charge of $1.50 a month, for which the user is entitled to 600 cu. ft.

Water used in excess of the minimum is charged at the rate of 26.25c per 100 cu. ft. Exceptions to this rate are the United States Government, the state of Texas, the county of El Paso, and the city of El Paso, which are charged the same rates as for service within the limits of the city of El Paso for water which they may use outside the city limits.

All charitable institutions, hospitals, schools, etc., within city limits pay a rate of 10.5c per 100 cu. ft.

J. A. Lindop,
Auditor.

Dexter, Mo.

Population	3,000
" served	3,000
Number of services	475
" " meters	475
" " hydrants	65
Miles of water main	8.0

The meter rates in Dexter are $1.00 minimum charge, for which the use of 3,000 gals. per month is permitted. Water in excess of the minimum allowance is 25c per 1,000 for the next 3,000 gals., and all over this quantity is billed at 15c per 1,000 gals. Bills are due and payable on or before the 10th of the following month.

Consumers own their meters and do all the installation under the supervision of the Water Superintendent. The city maintains all service taps from the main up to and including the meter free of cost to the consumer, after once installed, provided the installation was approved by the city when new.

There is no charge for fire hydrants nor for private fire sprinkler connections.

P. A. Stewart,
Superintendent, Water Department.

Albany, N. Y.

Population	135,000
" served	135,000
Number of services	26,912
" " meters	15,420
" " hydrants	2,037
Miles of water main	269.4

The city of Albany makes an assessment on all private dwellings situated on lots adjoining streets or avenues in which distributing pipes are laid, when metered, as follows:

Feet Front	Stories 1	1½	2	2½	3	3½	4	4½	5	5½	6
Under 20	$10.15	$13.95	$17.77	$21.56	$25.38	$29.18	$32.99	$36.79	$40.61	$44.40	$48.22
20-25	12.69	16.48	20.30	24.10	27.92	31.71	35.53	39.33	43.15	46.94	50.76
25-30	15.23	19.02	22.84	26.64	30.46	34.25	38.07	41.87	45.68	49.48	53.30
30-35	17.77	21.56	25.38	29.18	32.99	36.79	40.61	44.40	48.22	52.02	55.84
35-40	20.30	24.10	27.92	31.71	35.53	39.33	43.15	46.94	50.76	54.55	58.37
40-50	22.84	26.64	30.46	34.25	38.07	41.87	45.68	49.48	53.50	57.09	60.91

Feet Front	Stories 1	1½	2	2½	3	3½	4	4½	5	5½	6
Under 20	$6.77	$9.31	$11.84	$14.38	$16.92	$19.46	$22.00	$24.53	$27.07	$29.61	$32.14
20-25	8.46	11.00	13.54	16.07	18.61	21.15	23.69	26.23	28.76	31.30	33.84
25-30	10.15	12.69	15.23	17.77	20.30	22.84	25.38	27.92	30.46	32.99	35.53
30-35	11.84	14.38	16.92	19.46	22.00	24.53	27.07	29.61	32.15	35.69	37.22
35-40	13.54	16.07	18.61	21.15	23.69	26.23	28.76	31.30	33.84	36.38	38.92
40-50	15.23	17.76	20.30	22.84	25.38	27.92	30.46	32.99	35.53	38.07	40.61

A similar charge, as shown in the table below, is made for all buildings not occupied as dwellings, but used solely as stores, shops, private stables, garages, or for other purposes.

On all buildings whose full supply is measured by meter, a credit of the amount of the regular assessed water rate is given on the meter bill and no special rates are charged against the premises. The standard meter rate is 12c per 100 cu. ft. of water except when the consumption is over 50,000 cu. ft. daily, when the rate drops to 7c per 100 cu. ft.

Persons desiring to introduce a water supply to their premises make application at the office of the Superintendent of Water and deposit the charge established for tapping the main. This deposit is refunded in case the application is not granted. The insertion of the tap in a street main is made by the employees of the Bureau of Water. The installation of the services from the building is made for the owner by a licensed plumber, and the cost is borne by the owner.

The Bureau of Water does not receive any hydrant rental from either public or private hydrants, nor is any charge made for sprinkler systems except for the cost of installing the service from the main to the inside of the building.

Frank J. Cassidy,
Superintendent, Bureau of Water.

Lorain, Ohio

Population	47,000
" served	49,000
Number of services	9,000
" " meters	8,000
" " hydrants	755
Miles of water main	90.0

The water rates for metered services in Lorain are uniformly 16c per 100 cu. ft. There is a monthly meter service charge varying according to the size of the meter as follows:

½"	$ .20
¾"	.45
1"	.65
1½"	1.35
2"	2.35
3"	4.50
4"	7.20
6"	13.50

Services from the mains to the curb are installed by the water works at the expense of the city. Copper tubing is used exclusively, with a minimum size of ¾".

There are no hydrant or sprinkler charges.

C. A. Pauly,
Chief Engineer, Water Works Division, Department of Public Service.

A. W. W. A. Standard Valves

With Double Discs and Parallel Seats

Tested to 300 lbs. per square inch, suitable for water working pressure up to 150 lbs. per square inch. Iron body brass mounted and all iron.

ALL Valves up to and including 20" are made with cast iron bodies, bonnets, discs and wedges; 24" and larger sizes are made with the foregoing parts made of semi-steel with a minimum tensile strength of 35,000 lbs. per square inch.

The spindles on sizes up to and including 12" are made of medium manganese bronze, tensile strength 75,000 lbs. per square inch; 14" and larger size spindles are made of hard manganese bronze with a tensile strength of 85,000 lbs. per square inch. All other parts are made of special composition suited for the various uses.

These Valves are made with Hub, Spigot, Hub and Spigot, Flanged, Universal Pipe, or Converse Lock Joint Pipe ends or other special joint ends to order.

SMITH GATE VALVES

THE A. P. SMITH MANUFACTURING CO., EAST ORANGE, N. J.

NATIONAL METERS

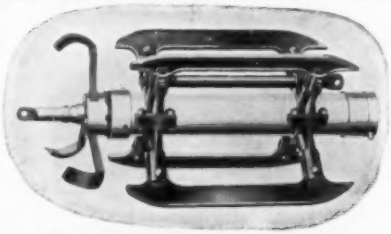
EMPIRE NASH CROWN GEM
EMPIRE-COMPOUND PREMIER

LEADERS FOR MORE THAN HALF A CENTURY

NATIONAL METER COMPANY

Executive Offices, 4201 First Avenue, Brooklyn, N. Y

TURBINE SEWER CLEANERS



ADJUSTABLE FOR 6 in.-20 in. SEWERS

SEND FOR CATALOG

TURBINE SEWER MACH. CO.

52nd & W. State St. Milwaukee, Wis.

"Easy to lay with unskilled labor"

SPECIFY

McWANE 2" CAST IRON PIPE

for your WPA and PWA projects

McWANE CAST IRON PIPE CO. BIRMINGHAM ALABAMA

PACIFIC STATES CAST IRON PIPE CO. PROVO, UTAH

LOCAL WORK for MORE LOCAL WORKERS

LOCAL labor is not only used for the laying but also for the manufacturing of Lock Joint Pressure Pipe, thus greatly relieving the local unemployment problem.

Lock Joint Pipe Co. Est. 1905 Ampere, N. J.

LOCK JOINT REINFORCED CONCRETE PIPE

PRESSURE - SEWER - CULVERT

Lewiston, Maine

Population	35,000
" served	98%
Number of services	4,500
" " meters	300
" " hydrants	342
Miles of water main	79

The minimum rate for water service in Lewiston is $15 per year. The quarterly meter rates are as follows:

First	2,500 cu. ft. or any part thereof	$3.75
Next	3,500 " " " " "	15c per 100 cu. ft.
6,000 to	15,000 " "	12c " " " "
15,000 "	25,000 " "	10c " " " "
25,000 "	50,000 " "	8c " " " "
50,000 "	75,000 " "	6c " " " "
75,000 "	150,000 " "	4½c " " " "
All over	150,000 " "	3½c " " " "

The meter bills are due and payable at the water office on the first day of the succeeding quarter, and if not paid within 20 days after they are presented, the water is shut off without further notice and is not turned on again without payment of the amount due and a further charge of $2.

For the installation of a new water service, the Department pays for the service from the main in the street to the curb cock on the outside of the sidewalk, and the consumer pays the cost of labor and materials from that point into the house.

There is no rental charge for hydrants, whether private or municipally owned. For the installation of a sprinkler, the whole cost is paid by the consumer for both material and supplies. No charge is made for water after the sprinkler service is installed complete and ready for use.

NAPOLEON COULOMBE,
Clerk, Lewiston Water Commission.

Binghamton, N. Y.

Population	76,000
" served	81,000
Number of services	13,667
" " meters	13,269
" " hydrants	1,202
Miles of water main	130.63

A minimum meter rate of $6.50 per year payable in advance entitles the consumer of 6,500 cu. ft., or 48,750 gals., of water per year. In case a larger quantity is used, a charge of 10c per 100 cu. ft. for such excess is made. Additional water rates are:

Monthly consumption of less than		4,000 cu. ft.	10c per 100 cu. ft.
" " from	4,000 to	8,000 " "	9c " " " "
" " "	8,000 "	16,000 " "	8c " " " "
" " "	16,000 "	24,000 " "	7c " " " "
" " "	24,000 cu. ft. and upwards		6c " " " "

All services are metered, except fire services and services exclusively for city use.

J. L. O'BRIEN,
Chief Clerk, Bureau of Water, Department of Public Works.

Niagara Falls, N. Y.

Population (estimated)	81,000
" served	85,000
Number of services	13,500
" " meters	13,500
" " hydrants	1,754
Miles of water main	203.9

The water rates of Niagara Falls were amended in January, 1935, and took effect March 1, 1935, as follows:

First	20,000 cu. ft. per quarter	$ 08	per 100 cu. ft.
From 20,000 to	80,000 " " " "	06	" " " "
" 80,000 "	200,000 " " " "	04½	" " " "
Over 200,000 cu. ft.		03½	" " " "

The minimum charge for water is $1.50 per quarter.

Applications for services are made by licensed plumbers or the owners of the premises. Services less than 2" in size are attached to the water mains by means of a corporation cock and tailpiece supplied by the Bureau of Water. The initial meter for each property is purchased from the Bureau of Water by the owner of the premises. If additional meters are desired for recording the subdivision of any supply, they must be furnished and set by the owners or consumers at their own expense. The Bureau of Water is not required to read such meters or to subdivide water bills.

Any bills for water consumption not paid within 30 days of the date of issue are subject to a 10% fee, which is collected with the amount of the water bill. All water bills which remain unpaid on May 1 of each year following the date of rendition are placed upon the first city tax rolls made up after that date and become a part of the tax roll and due with it. These bills are also subject to the same penalties and interest as taxes, for delinquent payment.

The requirement that meters shall be installed on all service branches is dispensed with in the case of service branches intended for fire protection, including sprinkler systems, provided that a bond of $1,500 is filed with the City Clerk as a guarantee that water taken through such service will not be used for other purposes than for fire protection. There is no charge for sprinkler services or private fire hydrants, and there is no service charge for individual domestic or industrial fire services. The rental on public fire hydrants is $18 each per year.

O. C. BUTLER,
Superintendent, Department of Public Service.

Columbus, Ohio

Population	312,000
" served	325,000
Number of services	61,900
" " meters	61,600
" " hydrants	4,042
Miles of water main	582.0

The rates for metered water consumed are as follows:

First	25,000 cu. ft. per mo., per 1,000	....	$1.20
Next	175,000 " " " " "	....	1.15
"	800,000 " " " " "	....	1.10
"	1,100,000 " " " " "	....	1.00
Above	2,000,000 " " " " "	....	.60

The rates outside the city are 10% greater.

The services from the main to the curb box are charged against the property, and this portion of the service is maintained perpetually by the city, the first charge of installation being the only charge.

The charges for making taps of various sizes are:

¾"	$30.00
1"	40.00
1½"	50.00
2"	70.00
4"	160.00
6"	225.00
8"	365.00

No charge is made for public fire hydrants. Private fire hydrants are billed at $12 each per year and sprinkler systems $12 per floor per year, unless the service is metered, in which case the consumption rates apply.

C. B. HOOVER,
Superintendent, Divisions of Water and Sewage Disposal.

Chicago, Ill.

Population	3,732,925
" served	4,153,267
Number of services	414,796
" " meters	111,970
" " hydrants	39,708
Miles of water main	3,733.6

Water meters are installed on service pipes where written request is made by the owner or agent of the premises supplied. Water meters are required on service pipes supplying city water to buildings, structures or premises, the gross for which under assessed rate amounts to $25 per year or more; on service pipes supplying four or more one-story stores; on service pipes to which are connected private supply lines which service buildings located remote from a city water main; and on service pipes supplying premises located outside the corporate limits of the city of Chicago. No meter is required on private residences in which only one family resides or in two-flat buildings in which only two families reside, where meters not to exceed ⅝" diameter would be used, except in the one-family residences or two-flat buildings where siphons, ice machines and other devices tending to the excessive use of water are installed; in accordance with the War Department permit of March 3, 1925.

The rates for metered water are 60c per 1,000 cu. ft. subject to a discount of 15% from the whole amount charged if paid within 20 days from the date of the bill.

LORAN D. GAYTON,
Acting City Engineer.

The 1936 Municipal Index will contain a special article on "The Filtration of Domestic Water Supplies" and another on "Elevated Storage Service for Water Works."

FERRIC CHLORIDE

(ANHYDROUS AND LIQUID)

The future trend in sewage treatment is chemical precipitation in conjunction with sludge dewatering on vacuum filters with Ferric Chloride as the precipitating and conditioning agent.

HERE ARE THE REASONS

Chemical precipitation with Ferric Chloride is a process which is:

Easily controlled and suitable for practically every type of sewage

Very flexible as regards the degree of treatment

Economical in installation and operating costs

Sludge conditioning with Ferric Chloride is a process which is:

Independent of weather conditions

Relatively free from odors

Conserving in space and labor

★

The Pennsylvania Salt Manufacturing Company offers a complete Ferric Chloride Service. Tank cars of Liquid Ferric Chloride for plants with railroad sidings, Anhydrous Ferric Chloride for plants without railroad sidings.

Anhydrous Ferric Chloride comes in powder form. It is packed in air-tight, non-returnable steel drums . . . Is instantly soluble . . . And can be stored indefinitely without deterioration or liquefaction.

Write Today For Information on the Application of Ferric Chloride . . . How and Where to Use It.

EST. 1850

PENNSYLVANIA SALT MFG. CO.

EXECUTIVE OFFICES, WIDENER BLDG., PHILADELPHIA, PA.

Branch Sales Offices: New York—Chicago—St. Louis—Pittsburgh—Tacoma—Wyandotte

Meadville, Pa.

Population	18,000
" served	20,000
Number of services	4,258
" " meters	4,518
" " hydrants	279
Miles of water main	39.03

The quarterly rates for metered services in Meadville are:

First	2,500 cu. ft.	@	17c per 100
Next	7,500 " "	@	12c " "
All over	10,000 " "	@	10c " "

There is no service charge, but the minimum quarterly charge is:

½" and ¾" meter	$ 1.35
1" "	3.00
1½" "	7.50
2" "	10.00
3" "	15.00
4" "	25.00
6" "	100.00

There is no charge for automatic sprinklers and there are no hydrant rentals.

The cost for ½" and ¾" service connections is $15 plus the cost of replacing whatever pavement is removed in installing the service. The charge for services larger than ¾" is cost plus 10%.

HARRY ELLSWORTH,
Superintendent, Water and Light Department.

Laconia, N. H.

Population	13,000
" served	12,500
Number of services	2,471
" " meters	2,402
" " hydrants	149
Miles of water main	40.0

The water rates of the Laconia Water Co. went into effect July 1, 1929. Private consumers pay 30c per 100 cu. ft. of water used in each 6 months. There is a minimum charge of $6 for 6 months, for which 2,000 cu. ft. is allowed. A service charge of 50c is added to all water bills each 6 months, and a discount of 50c is allowed all consumers paying bills within 31 days after they become due. If water bills are not paid within 31 days after they become due, the flow of water may be cut off and $2 charged for turning it on again. A discount of 33.3% is made on all water bills in excess of $50 for each 6 months, and an extra discount of 25% on all bills in excess of $500 for each 6 months.

Water used at all property belonging to the city of Laconia is figured at the regular rate except water used through a hydrant meter, where the rate is 15c per 100 cu. ft. for the first 133,333 cu. ft., and the balance at 10c per 100 cu. ft. A discount of 50% is allowed on all water bills of the Laconia Home for the Aged and the Laconia Hospital Association. The minimum charge for the Belknap County Farm and the Laconia Country Club for each 6 months is $187.50 for 62,500 cu. ft. of water, all excess being paid for at the rate of 30c per 100 cu. ft.

The charges for hydrants, standpipes and automatic sprinklers for private consumers are $15.00 per hydrant and standpipe each 6 months. Where there are 10 or more hydrants billed to one private consumer, the charge is $12.50 per hydrant each 6 months. For the city of Laconia, the charge is $12.50 per hydrant each 6 months. Automatic sprinklers carry a minimum charge of $7.50 each 6 months for sprinkler heads up to 100, each head in excess of 100 is charged at 1.25 cents up to 500 heads, then 1 cent per head from 500 to 1,000 heads, and each head in excess of 1,000 is charged at ½c each.

The mains are extended when prospective consumers guarantee to pay rates sufficiently high to return the company 10% per year on its cost, until such time as the regular rates produce enough to pay 10%.

Services are installed when an application is made by the owner or the contractor in charge of construction, if the company is assured that service is to supply a permanent structure.

THEODORE L. CATE,
Superintendent, Laconia Water Co.

Bangor, Maine

Population	28,000
" served	25,000
Number of services	6,098
" " meters	176
" " hydrants	407
Miles of water main	67.3

The domestic meter rates in Bangor start with a minimum charge of $3.00 per quarter, which permits the use of 1,200 cu. ft. or 9,000 gals. of water. For each additional 100 cu. ft. used per quarter, the charge is 20c.

For other metered services the quarterly minimum charges are:

6" meter	$25.00
(Allows 33,000 cu. ft. to be used quarterly)	
4" meter	15.00
(Allows 15,000 cu. ft. to be used quarterly)	
3" meter	6.00
(Allows 5,000 cu. ft. to be used quarterly)	
2" meter and smaller	3.00
(Allows 2,000 cu. ft. to be used quarterly)	
First 100,000 cu. ft., or any part thereof over the allowance indicated above, per 100 cu. ft.	.07
All over the first 100,000 cu. ft., per 100 cu. ft.	.05

Persons desiring water services must make application at the office of the Bangor Water Board. The applicant must be the owner of the premises, and must sign a contract agreeing to take and pay for water according to the city ordinances. Service pipes are provided and maintained by the Board from the water main to the curb line of the sidewalk. All water rates are due and payable on the first day of January, April, July and October. If bills are not paid within 15 days thereafter, the rates are increased 10% upon the original amount. Any rate remaining unpaid 30 days from the date of the bill is considered sufficient cause for the discontinuance of the service, and the service is not turned on again until all charges have been paid, with a penalty of $1.00.

All private fire protection service is installed by the Board, which determines the best location for the line and lays the pipe from the street main to a point just inside the wall of the building, or within the building line of open yards. No single connection for sprinkler service is made larger than 6" in diameter. The consumer is charged the exact cost of labor and materials used in the work of installing the service, with an additional 10% to cover the cost of supervision, use of tools, etc.

Special flat rates are charged to schools, the City Hall and Public Library, the city stable, city fire stations and the Water and Electrical Departments themselves, as well as the City Farm.

The charges for public fire hydrants are $30 for each hydrant per year, and for street standpipes, $40 each per year, for street troughs, $50 each per year, and for city parks, $150 each per year.

A. W. READ,
Superintendent, Bangor Water Department.

Leavenworth, Kans.

Population	18,000
" served	12,000
Number of services	4,597
" " meters	4,237
" " hydrants	208
Miles of water main	35.0

The water rates in Leavenworth, which became effective May 1, 1934, are:

Gallons		Rate per 1,000 Gallons	Cost
0 to	1,500	Minimum	$1.00
1st	1,500	@ .31	.47
Next	6,000	@ .31	1.86
"	9,000	@ .28	2.52
"	18,000	@ .26	4.68
"	36,000	@ .24	8.64
"	72,000	@ .22	15.84
"	144,000	@ .20	28.80
"	288,000	@ .18	51.84
"	576,000	@ .16	92.16
"	1,152,000	@ .14	161.28
"	2,304,000	@ .12	276.48
"	4,608,000	@ .10	460.80
"	9,216,000	@ .08	737.28
Over	18,432,000	@ .075	

A flat rate of $6.75 per month is charged for sprinkler services; there are no service charges whatsoever for meters, and the installations are governed by state statutes.

A. H. BOYER,
Secretary, City Water Works.

Riverton, Wyo.

Population	1,800
" served	1,600
Number of services	375
" " meters	350
" " hydrants	37
Miles of water main	7.0

The minimum base rate for water in Riverton is $2.00 per month, which permits the use of 3,000 gals. of water. The next 4,000 gals. are billed at 25c per 1,000 gals.; the next 5,000 gals. at 25c per 1,000 gals.; the next 50,000 gals. at 15c per 1,000 gals.; the next 50,000 gals. at 10c per 1,000 gals.; and all over 110,000 gals. at 8c per 1,000 gals. The minimum rate is payable each month in advance.

Water is shut off if the charges as billed, together with any fine that may be due, are not paid within five days after the 10th of the month.

All fire hydrants are municipally owned. There is no hydrant rental. There are no sprinklers in use for private fire protection, and the cost of installing domestic water services is the actual cost to the city, which is billed to the consumer.

C. E. DEARDORFF,
Superintendent of Water Works.

Exceptionally heavy traffic on this Columbia, Mo. street, yet not one cent of maintenance cost in 29 years service.

Wherever Records are kept . . .

SOME BRICK PAVEMENT Maintenance Costs

$0.0089 per sq. yd. annually during 44 years service—Columbus, O.

•

$0.0000 per sq. yd. during 29 years service—Columbia, Mo.

•

73 blocks maintained 20 years for total cost of $12.75—Russell, Kans.

•

Buffalo, N. Y.—40 year average of all brick less than $0.01 per square yard annually.

BRICK PAVEMENTS SHOW Lowest Maintenance Cost

One fact about modern pavements is definitely established. And that is—brick has the lowest upkeep costs. By *far* the lowest.

If you want to build a pavement that averages less upkeep per square yard than a cent per year for a 44 year stretch, follow the example of Columbus, Ohio . . . . If you'd like to maintain 73 blocks of pavement 20 years on a grand total of $12.75, pave as they did at Russell, Kansas, ... if you would like to maintain a busy street almost a third of a century for nothing flat, Columbia, Missouri has done it.

These are actual figures on brick. Only brick pavements can turn in maintenance records like these.

And again, in the U. S. Bureau of Roads, long-time experimental test (Chevy Chase) brick maintenance costs are by far the lowest.

The reason for this brick supremacy is that brick resists *weather* damage as well as traffic wear.

Resurfacing many types of worn pavement with brick is a growing practice. On old or new pavements, brick pays for itself in a very short time. For further information address National Paving Brick Association (Affiliated with Structural Clay Products, Inc.) National Press Building, Washington, D. C.

BRICK

Exhibitor: Highway Exhibit, American Road Builders' Association, January 20-24, Cleveland, Ohio. 30th Annual Meeting National Paving Brick Association at Columbus, Ohio, January 29, 30, 31, 1936.

Bay City, Mich.

Population	48,000
" served	45,000
Number of services	11,689
" " meters	11,478
" " hydrants	1,178
Miles of water main	171.0

The consumption charges for water used through meters in Bay City, Mich., are:

First	10,000 cu. ft.	14c per 100 cu. ft.
Next	40,000 " "	9c " " " "
All additional	" "	6½c " " " "

Rates outside city limits are 25% over above rates. In addition there is a service charge per quarter as follows:

½" to ⅝" meter	$ 1.70
¾" "	2.20
1" "	3.10
1¼" "	4.45
1½" "	5.60
2" "	8.00
2" "	15.00
4" "	23.00
6" "	43.00
8" "	50.00

Water furnished by the Water Department to any other department of the city is charged at the above rates. For the specific purposes named below, the Water Department charges the following rates:

Rental for each fire hydrant	$60.00 per year
Sewer flushing, for each connection	1.00 " "

The charge for private fire hydrants with double streams is $12.50 for the first hydrant, and $9.00 for the first single hydrant, and for each additional hydrant connected for hose, $3.00 per year.

For each fire connection service on private property, the annual rates are dependent upon the size of the pipe as follows:

1½"	$15.00 per year
2"	10.00 " "
3"	20.00 " "
4"	20.00 " "
6"	25.00 " "
8"	75.00 " "

JOHN S. CRAMPTON,
Superintendent, Bay City Water Department.

National Conference on Accident Prevention to Meet in Washington, D. C., December 18

AT the request of President Roosevelt, Secretary of Commerce Daniel C. Roper has called a conference of business men and public officials to be held in Washington on December 18, 1935, for the purpose of devising ways and means to make accident prevention more effective in the United States.

In his letter to Secretary Roper the President said:

"Accidents constitute one of our gravest national problems, and it is important that we obtain wide cooperation and consider all possible counsel in applying the most efficacious remedies in the interest of preservation of life and property in this country.

"It is clear that jurisdiction over highways is almost wholly within the province of state, county and municipal government—not of the Federal Government. Nevertheless, you can accomplish much by getting these other government agencies to proceed more actively than they have heretofore."

To head different study groups acceptances have been received from eleven widely known men.

Chairman, General Committee—Senator A. Harry Moore, N. J.
Causes and Remedies—Henry H. Heimann, Niles, Mich.
Rural and Home Accidents—Senator Arthur Capper, Topeka, Kans.
Urban Street Safety—Thomas J. Watson, New York City, President, International Business Machine Company
Cooperation with Common Carriers—W. Averell Harriman, New York City, Chairman of the Union Pacific Railroad Company
Cooperation with the Automotive Industry—John L. Lovett, Detroit, Mich., General Manager, Uniform Traffic Regulations—Representative Emmet O'Neal, Louisville, Ky.
Driver Training and Law Enforcement—Dr. B. L. Corbett, Executive Secretary, Milwaukee, Wis., Safety Commission.
Education—Barron G. Collier, New York City, former Deputy Police Commissioner in Charge of Safety for New York City
Cooperation with Safety Groups—Fred M. Rossland, N. J., former Secretary, Governor's Street and Highway Safety Committee
Safety in the Air—Senator W. G. McAdoo, Los Angeles, Calif., President, National Aeronautic Association
Safety at Sea—Walter Parker, New Orleans, La., former Chairman of the National Flood Prevention and River Regulation Commission

Labert St. Clair, Transportation Assistant to the Secretary of Commerce, is acting as Director of Activities in supervising the program.

In announcing the scope of the conference Secretary Roper said that the personnel of the sub-committees would consist largely of public-spirited citizens who had evinced interest in safety matters. It is his hope that he will be able to obtain accident-prevention suggestions from many other persons who are not attached to the conference group. To that end he is writing letters requesting suggestions to about 900 persons who have attended one or more of the four sessions of the National Conference on Street and Highway Safety, which have been held under the sponsorship of the Department of Commerce since 1924, and of which he is Chairman ex-officio. Further, he will be glad to hear from every one who has a safety suggestion.

Three important steps which the conference can take that will prove helpful in reducing accidents, in Secretary Roper's opinion, are:

(1) Draft a plan under which the Department of Commerce, cooperating with state and local agencies, can gather and disseminate accurate current statistics on fatal and non-fatal accidents.

(2) Determine the chief causes of major past accidents and arrange for continuing prompt information as to causes of future accidents.

(3) Determine remedies for accidents and aid in putting these remedies into effect at the earliest possible moment.

"The fixed and continuing purpose of the group," says Secretary Roper's announcement, "should be to cooperate to the fullest extent with existing agencies engaged in accident-prevention work. Emphatically, the new organization should not seek to supplant any existing agency which is satisfactorily discharging its duties, but should act as a national clearing house and counseling board which will make the work of existing agencies more efficient."

Milwaukee Wants Federal Municipal Currency for Housing

BY resolution of the Common Council of the city of Milwaukee, adopted November 25, the Board of Public Land Commissioners was directed to communicate with the proper Federal authorities to learn upon what terms a loan can be secured by the city for the erection of large groups of cottages on tax-delinquent land. The communication of the Council's Committee on Taxation and Financial Problems, on which this resolution was based, said in part:

"The city will in all probability come into possession shortly of about 7,000 platted lots. It is proposed to select two areas, purely residential, where from 500 to 800 lots of a group, with but few lots privately owned, are interspersed. This will enable the city to arrange zoning regulations for the guidance of development in a manner that will prevent its becoming a blighted area. . . .

"It is proposed to submit to our Government an extremely attractive home-building project, soliciting funds from the Government for the erection of a cottage on each of these lots, ranging in value from $3,500 to $5,000 each, exclusive of the lot value; the city to issue twenty-year serial bonds to the Government and receive municipal national currency, holding the city bonds as security for the currency. The currency to be drawn as needed during the development of the housing project. This loan of Milwaukee city national currency to be made to the city the same as has been made to national banks since 1863, without charge more than enough to reimburse the Government for actual expense. This would come well within one per cent.

"The city to function as landlord, collecting rent in lieu of taxes, exercising supervision. The homes to be leased to single families, the lease to be made on the 99-year plan so that tenants will feel as secure from one generation to another as if they had title, although the landlord retains authority sufficient to prevent abuse of property or annoyance to others. The incentive to make a profit on the home will be obviated, for the property will be a permanent home. The rents collected should be remitted to the United States Treasury for redemption of the currency, except the retention by the city of enough to cover maintenance and supervision. In this way we pay no interest, the city becomes actual owner, and the rental takes the place of tax. The plan is equitable from beginning to end."

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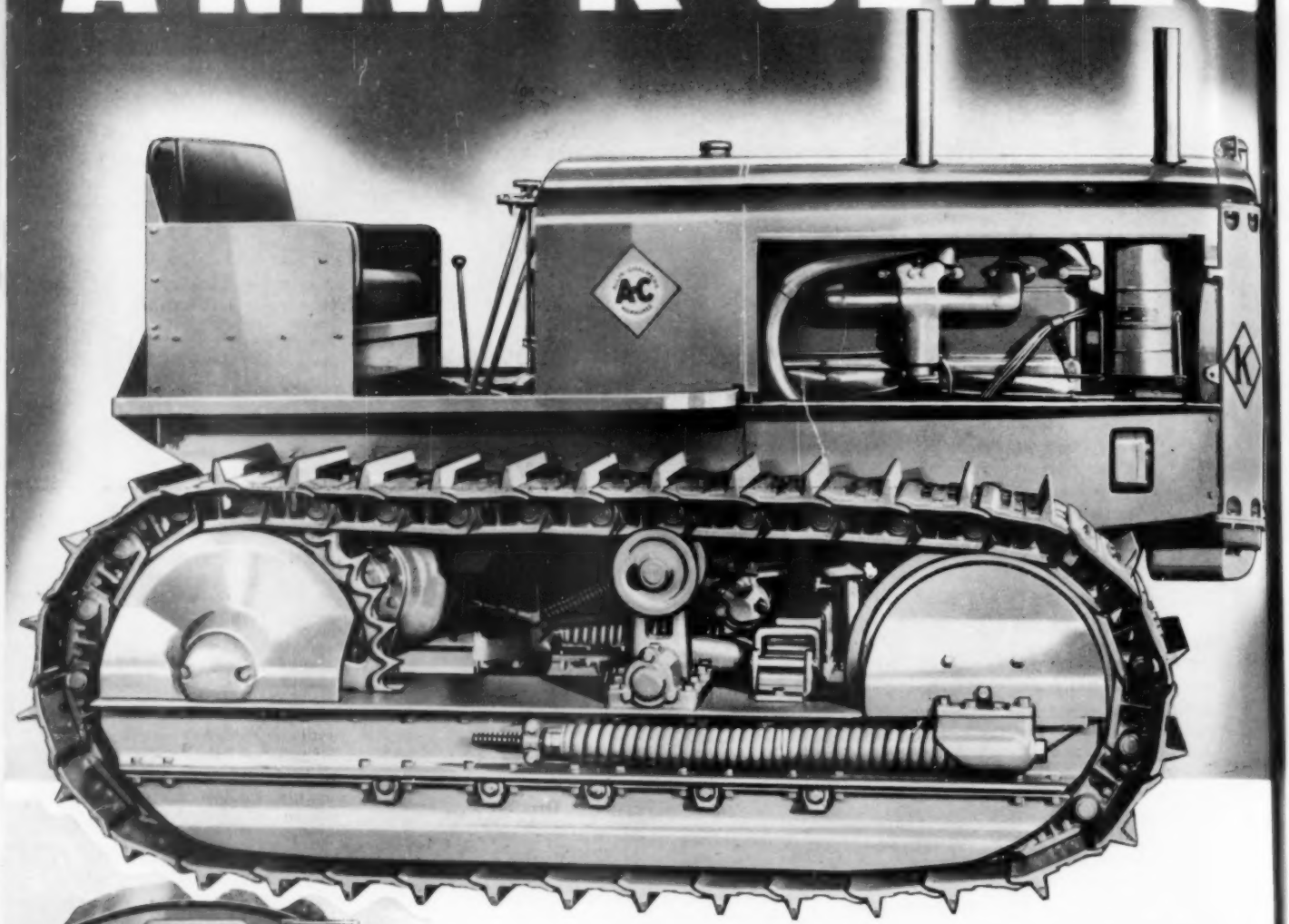

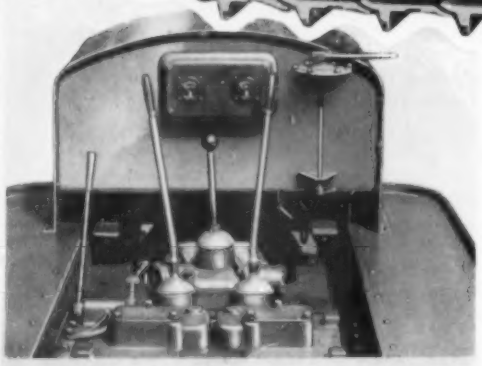

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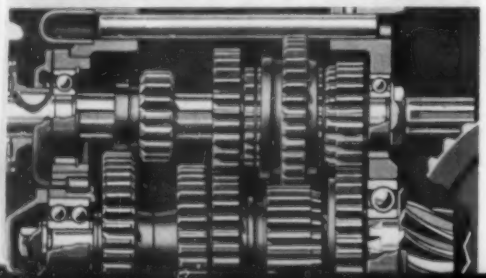

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Prepared by
FRANK B. WILLIAMS
Author of "The Law of
City Planning and Zoning"

ZONING and PLANNING NOTES

From Data collected
by the Zoning Committee
of New York
(233 Broadway)

Parks—Dedication

NEW YORK.—*Campbell v. Town of Hamburg*, 281 N. Y. Supp. 753 (Supreme Court, June 27, 1935).—The town of Hamburg acquired the land in question from the Locksley Park Company, a private corporation. The deed by which the town took the land provided that the land was taken and accepted by the town subject to the covenant and restriction that it shall be maintained and used by the town in perpetuity as a park for the use and benefit of citizens and residents of the town.

It is a basic property right of any municipality to prevent the usurpation by strangers of that which the municipality has created and is maintaining for its own citizens and residents. Common sense and reason must be employed in the interpretation of the covenant in this case. There can be no complaint against the occasional individual invitee who comes as a guest of a resident of the town. But it was a mistaken belief on the part of the town authorities that they could allow thousands of outsiders without right or cost to obtain the benefit of the park to the practical exclusion of the citizens of the town. The maintenance of a restaurant, the conducting of dances and the rental of lockers are common incidents of a pleasure ground and contribute to the use and enjoyment of the park. In the absence of discrimination among local citizens and residents, no cause of complaint of this will lie.

Streets—Trees

DELAWARE.—*Lynch v. Town Council of Georgetown*, 180 Atl. 594 (Court of Chancery, June 20, 1935).—This is an action seeking to enjoin the town of Georgetown from removing two shade trees standing in the street in front of Lynch's office building on Market Street in the town of Georgetown. The state has, by lawful proceedings duly taken, decided to improve the street by extending the cement roadbed from curb line to curb line, for which the destruction of the trees is necessary. The charter of the town confers on the Town Council the right of "superintendence and oversight of all roads and streets, lanes, alleys, squares and gutters in said town," and the Town Council has consented to the improvement and the removal of the trees.

The complainant contends that whether he owns the fee (subject to the right of the public to use the street) to the center of the street or not, he has such interest in the preservation of the trees that if there is any threat on the part of any one unlawfully to destroy them, he is entitled to relief against the threatened injury. This proposition, in this case, may be granted. Who owns the fee in the street where trees stand is not of importance in determining whether the damage, in the eyes of the law, is done to the abutting owner by their destruction.

The right of the individual citizen whose property abuts on a street or highway, however, to the continued presence of trees therein, is subject to the lawfully conferred paramount authority of the appropriate body having jurisdiction over the streets to remove them for the purpose of rendering the highway safe and convenient, or of carrying out a plan or system of street improvements, or of preventing roots from clogging a city sewer.

When analyzed, therefore, Lynch's contention is that, in his opinion, the removal of the trees is not necessary for any such purpose, and the town and state authorities are unreasonable in entertaining opposite views. And so Lynch asks the Court to examine the matter to determine whether these authorities have exercised their discretion reasonably in this case. Courts are loath to make such an examination; and in this case the Court decides that there has been no abuse of discretion, and Lynch cannot prevent the removal of the trees.

WASHINGTON.—*Shaw v. City of Yakima*, 48 Pac. 2d, 630 (Supreme Court, August 17, 1935).—Shaw, the plaintiff in this action, has for many years owned a corner lot in the city of Yakima, and lived there. About fifteen years ago he planted a maple tree in the parking strip which, in the course of time, grew and flourished, becoming an object of beauty which added greatly to the enjoyment of the plaintiff's property. In January, 1933, agents of the city, over plaintiff's protest, cut the tree down and removed it. In this action plaintiff demands compensation.

The city answered claiming that the tree was an interference with the view of persons using the street, and that the plaintiff had filed no verified claim for her damage. The jury found that she was damaged $100, and awarded her treble damages under a statute. The ultimate or fee title in the land on which the tree stood was in the plaintiff, subject to the city's right to use the land for street purposes. Plaintiff also had a qualified and restricted right to make a reasonable use of that portion of her half of the street abutting on her property set aside as a parking strip, by planting grass, shrubs and trees in it, to beautify it; subject always to the paramount right of the city to maintain its streets in a safe condition for traffic and to maintain the paved portion of the street and the sidewalk clear from obstruction and available for the use of the public.

The city having so improved the street as to leave the vacant strip of land, the plaintiff was clearly within her rights in planting and maintaining the tree, subject to the right of the city to abate the tree as a nuisance if it interfered with the improvement of the street. It does not appear that the tree was in any way a nuisance or interference with improvement; and in destroying it the city acted arbitrarily and without right or reason.

In damage cases the charter of the city, as a condition precedent to an action, requires the plaintiff to file a verified claim for the amount claimed, within a certain time. This the plaintiff did not do. She now says that the actioh of the city was, technically, a taking of property, in which a verified claim is not required. The Court, however, decides against this contention, holding that the plaintiff's property was not taken but damaged, and she is therefore barred from all claim against the city by her failure to file the claim for damage as required by the charter.

Zoning Ordinance—Residential District—Reasonableness

ILLINOIS.—*Ehrlich v. Village of Wilmette*, 197 N. E. 567 (Supreme Court, June 14, 1935).—In this action Ehrlich is asking for an injunction against the enforcement, as to him, of the provisions of the zoning ordinance restricting his lots on Fourth Street to residential use.

The evidence shows that because of the public character of Fourth Street, the heavy traffic on it, with attendant noise and dirt; the noise and disturbance from switching cars in nearby railroad yards immediately across the street from Ehrlich's lots; the close proximity of the railroad station, with attendant crowds and noise; the unfinished side walls of the building and of the rear yard of the store building across the alley from Ehrlich's lots, and the general character of the neighborhood and surroundings of the premises, Ehrlich's lots are not suitable for the construction of single-family dwellings; that the territory is commercial and suited for a combination apartment and store building, for which purpose it would be worth from $350 to $450 a foot, whereas for residential purposes it is worth not more than $50 a foot; that the zoning ordinance is arbitrary as to Ehrlich, constitutes a cloud on his title, and should be enjoined; that the inclusion of his property in an A residential district is not indispensable to the general zoning plan, but is contrary to the public health, safety, morals or general welfare of the village; and that its inclusion in a B commercial district would not tend to decrease the value of surrounding property.

On this evidence the Court granted the injunction, holding that as to Ehrlich the zoning ordinance was unreasonable.

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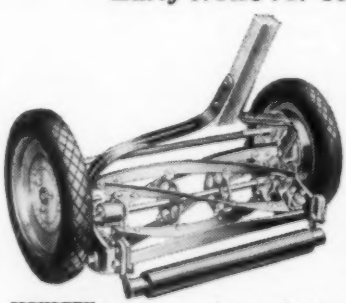

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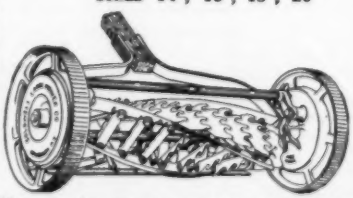

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THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, Attorney at Law

Accidents

Where pedestrians were injured through skidding of automobile on ice negligently permitted to form on bridge connecting counties and city and town, the counties, city and town held jointly liable under statutes (New York Court of Appeals: *Khoury v. Saratoga County*, 196 N. E. 299).

City setting street apart for coasting held not liable for death of boy whose sled struck automobile parked in street (Ohio Supreme Court: *City of Mingo Junction v. Sheline*, 196 N. E. 897).

Town held liable for injury to pedestrian struck by snow and ice falling from town hall, but her husband's failure to give notice of accident precluded recovery by him (Massachusetts Supreme Judicial Court: *Wood v. Town of Oxford*, 195 N. E. 321).

Bond Issues

Statute requiring bonds to be "signed" by mayor and treasurer held not complied with by printing facsimile signatures (Michigan Supreme Court: *Smith v. Curran*, 255 N. W. 276).

City held not liable for interest on special assessment bonds after maturity where improvement fund was insufficient (Indiana Appellate Court: *La Plante v. City of Vincennes*, 194 N. E. 191).

Contracts

Lowest bidder not properly equipped to construct pipe line held not entitled to avoid award to another contractor (Pennsylvania Supreme Court: *Kaufman v. City of Erie*, 175 Atl. 406).

Depositories

City held not preferred creditor of insolvent bank in which municipal funds had been lawfully deposited (Alabama Supreme Court: *Montgomery v. City of Athens*, 155 So. 551).

City held not liable to improvement district for loss of funds deposited by City Collector in bank that failed (Arkansas Supreme Court: *Board of Commissioners of Street Improvement Commissioners v. City of Little Rock*, 76 S. W. 2d, 667).

Drainage

Owner of property flooded because of city's non-compliance with injunction requiring adequate storm sewer held entitled to punitive, as well as compensatory, damages (Springfield, Mo., Court of Appeals: *Kelly v. City of Cape Girardeau*, 72 S. W. 2d, 880).

Navigable Waters

Municipal regulation of vessels in harbors, etc., held invalid as encroaching upon Secretary of War's powers (United States Circuit Court of Appeals, Seventh Circuit: *City of Milwaukee v. American Steamship Co.*, 76 Fed. 2d, 343).

Nuisances

City held liable for nuisance resulting from noxious odors from septic tank, although third party's operation of slaughterhouse contributed to nuisance (Oklahoma Supreme Court: *Town of Sentinel v. Riley*, 43 Pac. 2d, 742).

Official Removals

Transfer of money from one fund to another without securing State Budget Director's approval held breach of duty warranting removal of Mayor and Commissioners (Iowa Supreme Court: *State v. Manning*, 259 N. W. 213).

Ordinances

Mayor's contract for codification of ordinances without assent of council held invalid (Louisiana Court of Appeal: *Chandler & Chandler v. City of Shreveport*, 162 So. 437).

Pensions

Policeman's widow who killed him off duty for misconduct toward her held not entitled to pension (Colorado Supreme Court: *People v. Milliken*, 42 Pac. 2d, 195).

Fireman's widow held to have lost right to pension on re-marrying, despite subsequent annulment of re-marriage (Minnesota Supreme Court: *Northrup v. St. Paul Fire Department Relief Assn.*, 259 N. W. 185).

Public Utilities

Public utility corporation holding non-exclusive franchise held entitled to enjoin establishment of competing plant by city only if city acts unlawfully as in this case, by attempting to issue electric bonds without required electoral assent. PWA grant upheld (United States Circuit Court of Appeals, Tenth Circuit: *Kansas Gas & Electric Co. v. City of Independence, Kan.*, 79 Fed. 2d, 32.) But see *Arkansas-Missouri Power Co. v. City of Kennett, Mo.*, and *Missouri Public Service Co. v. City of Trenton, Mo.*, 78 Fed. 2d. 911, decided by the Circuit Court of Appeals, Eighth Circuit, where PWA contract was held invalid as delegating municipal power to Federal Government, and where Federal Court was held without jurisdiction for want of actual non-resident party. See, also, *Illinois Power & Light Corp. v. City of Centralia, Ill.*, 11 Fed. Supp. 874, decided by U. S. District Court, Eastern District of Illinois, holding that power company could question validity of NRA provisions for aid for municipal utility projects and that PWA contract was invalid because of unconstitutionality of NRA and because involving delegation of municipal power to Federal Government, and holding that in company's suit to enjoin erection of competing municipal utility city was not entitled to have company's franchise forfeited.

Purchases

City receiving and using fire hose held liable to seller despite irregular execution of contract (Florida Supreme Court: *City of Punta Gorda v. Eureka Fire Hose Manufacturing Co.*, 158 So. 128).

Contract for purchase of water meters held not invalid on theory that specifications were indefinite as guaranty to be given (Michigan Supreme Court: *Robinson v. City of Saginaw*, 255 N. W. 396.)

Salaries

Police chief held entitled to salary while in office although ineligible because not a qualified elector of city (Oklahoma Supreme Court: *Franks v. Ponca City*, 38 Pac. 2d, 912).

Sewage Disposal

Emission of foul odors from sewage-disposal plant held to entitle adjacent property owners to permanent damages (Oklahoma Supreme Court: *City of Edmond v. Billen*, 42 Pac. 2d, 253).

Town held liable for damage to private land through overflow of defective sewage septic tank (Mississippi Supreme Court: *Hodges v. Town of Drew*, 159 So. 298).

City held not liable for overflow of inadequate sewer in annexed territory (Kentucky Court of Appeals: *Seay v. City of Louisville*, 82 S. W. 2d, 212).

Special Assessments

Omission of verification from petition in suit to contest street-lighting assessment held not fatal defect, petitioner being entitled to supply omission, even after lapse of the time within which suit could be brought (Texas Court of Civil Appeals: *Martinez v. City of Dallas*, 78 S. W. 2d, 1025).

Objection to street improvement assessments for defects in proceedings held waived where property owners saw the improvement being made but did not complain until it had been completed (Ohio Court of Appeals, Miami County: *City of Troy v. Schnell*, 193 N. E. 782).

Streets

Abutters held to have no such rights in street names as to prevent city from changing names (Illinois Supreme Court: *Hagerty v. City of Chicago*, 195 N. E. 652).

City held not liable to abutters for damage resulting from grading of street as part of state highway (Georgia Court of Appeals: *Perkerson v. Mayor and Council of Greenville*, 180 S. E. 22).

Water Supply

Twenty-five-year contract for hydrant water held void as exceeding debt limit (Illinois Supreme Court: *East St. Louis & Interurban Water Co. v. City of Belleville*, 196 N. E. 442).

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ICY ROADS invite disaster—in wrecked cars, maimed citizens, injured children and, all too often, deaths. Even careful motorists are sometimes helpless. And plain sand or cinders are by no means a sure skid preventive. On hard-frozen ice, wheels simply brush them aside.

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MUNICIPAL AND CIVIC PUBLICATIONS

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Municipal Government

A Century of Municipal Progress, 1835-1935.—Edited by Harold J. Laski, W. Ivor Jennings and William W. Robson. Published under the auspices of the National Association of Local Government Officers of Great Britain, by George Allen and Unwin, Ltd., London. 1935. 511 *pp.* $5.00 *from* THE AMERICAN CITY.

"Nothing surely that the British people have done in the world in these hundred years is more important than the revolution it has effected in its local government."

"Bacon said that it was the duty of Parliaments to find remedies as fast as time breedeth mischief. Nobody looking back on the hundred years since 1835 could say that this duty has been fulfilled. We see all round us the consequences of delay, neglect, false starts, and mischievous fears. But nobody would say of this record that it is the record of a people entirely wanting in initiative and resilience, qualities that are urgently needed for the immense tasks that lie ahead of our civilization.

"The essential purpose of this volume is to depict the remarkable growth and development which have taken place in the sphere of local government during the past century, and to evaluate, in the light of that expansion, the work of our local authorities today. Thus it is at once a record of achievement and an interpretation."

These quotations indicate the scope and candor of this notable symposium on British municipal progress during the last hundred years. The nineteen chapters, by writers of outstanding ability in their respective fields, cover: The Social Background; The Municipal Revolution; The Town Council; The Committee System in Local Government; The Municipal Service; The Health of the People; Highways and Transportation; Housing and Civic Planning; The Nation's Schools; Public Libraries; Municipal Museums and Art Galleries; The Police and Public Safety; The Public Utility Services; The Relief of the Poor; The Finance of Municipal Government; Parliament and the Local Authorities; and Central Control. There is also a preliminary chapter on conditions before 1835 and a concluding chapter on the outlook, as well as a chronological table, a select bibliography and an excellent index.

Sidney Webb greeted this book on its publication in England (October 15) by saying that it "must imperatively be read by every Local Government Officer, high or low, as the indispensable basis of his professional culture."

The Role of Government in the Field of Business

Business and Government.—By Charles C. Rohlfing, Edward W. Carter and Bradford W. West, faculty members in the Wharton School of Finance and Commerce, University of Pennsylvania, and John G. Hervey, Associate Dean, Temple University Law School. University Business Book Series. The Foundation Press, Inc., Chicago, Ill. Second edition, 1935. *XV* + 605 *pp.* $4.00.

The purpose, admirably accomplished, of this book is to present a general text of college grade on the role of government in the field of business and to integrate current governmental problems with their appropriate background as affected by the operation of the Constitution and the courts.

The revised edition includes a discussion of important 1935 legislation and of recent decisions of the United States Supreme Court affecting the New Deal. Among the legislative proposals that have been considered are: Proposed Banking Act of 1935; Unemployment Insurance Bill; Labor Disputes Bill; Roosevelt Tax Plan; and the Norris Amendment, restricting Supreme Court decisions.

Chapter heads of special interest to readers of THE AMERICAN CITY include: The Regulation of Public Utilities; Highway and Air Transport Regulation; State and Local Taxation; Public Expenditures and Business; Strikes, Picketing and Boycotts; and Social Security.

Public Works and Public Spending

Brass Tacks.—By David Cushman Coyle. National Home Library Foundation, Washington, D. C. 1935. *VIII* + 150 *pages.* $0.25.

Public Works in Prosperity and Depression and their utilization as an agency of economic stabilization. Prepared for the National Planning Board of the Federal Emergency Administration of Public Works by Arthur D. Gayer. National Bureau of Economic Research. 1935. 484 *pp.; 100 tables; 3 charts.* $4.00.

Economics of Planning Public Works.—By John Maurice Clark. A study made for the National Planning Board of the Federal Emergency Administration of Public Works. 1935. *IV* + 194 *pp.* $0.25 *from the Superintendent of Documents, Washington, D. C.*

Income and Economic Progress.—By Harold G. Moulton. Publication No. 68 of the Institute of Economics of The Brookings Institution, Washington, D. C. 1935. *XI* + 191 *pp.* $2.00.

Here are four new books dealing with the perplexing problems how and how far public works, taxation, and other stimulants to more adequate use of our productive power can best be used as aids to the curing or preventing of business depressions.

To non-academic readers wishing to form sound and enlightened judgments on these highly controversial subjects, THE AMERICAN CITY suggests that Mr. Coyle's brief and sprightly treatise be read as a preface to the other three more erudite discussions; and that "Brass Tacks" be then reread in the light of the learning thus gained. After so doing, many a reader, we believe, will wish to preserve and consult the books by Drs. Gayer and Clark and the Brookings Institution as valuable additions to his reference library, and to order additional copies of Mr. Coyle's book for distribution as provocative Christmas presents.

Municipal Government

Our City—New York: A Textbook on City Government.—By the High School Students of New York City. Revised by Frank A. Rexford, Director of Education, Museum of the City of New York, formerly Director of Civics, and Muriel Jean Drummond, Teacher of Civics, Newtown High School, New York City. Introduction by Harold G. Campbell, Superintendent of Schools, New York City. Allyn and Bacon, Boston. 1935. *XXI* + 294 *pp. Illustrated.* $1.20.

The first edition of this book on functional civics, published in 1925, was composed of student themes. In 1930 it was revised by another group of students, to whom, as in the first case, its value lay in the study and preparation involved in its production. It now serves as a textbook, broadened by the inclusion of the relations of local, state and Federal governments, and revised by two experienced students and teachers of the kind of civics that aims not merely at factual knowledge, but at the practice of good citizenship and constructive participation in public affairs.

Municipal Government

The Saga of a City and A New Concept of Government.—By Hon. Samuel A. Carlson. Collaborating author and writer of Chapter One, Arthur Wellington Anderson, Official Historian of the city of Jamestown, N. Y. 112 *pp.* $1.50.

This volume embodies the experience and standards of the author, as former Mayor of Jamestown, and as a student of government in this and other countries. A chapter is given to the history and operation of the well-known municipal electric light plant of Jamestown and to the municipalization of the city's water supply. Several chapters present the author's observations and comments as a member of the group of American city officials and professional men that investigated municipal government in Germany, Russian and Sweden, under the auspices of the Carl Schurz Foundation, in 1933.

Finance

Public Finance.—By Clyde L. King, Professor of Political Science, University of Pennsylvania. The Macmillan Company, New York. 1935. *X* + 602 *pp.* $3.75 *from* THE AMERICAN CITY.

The purpose of this book—admirably accomplished by its distinguished author—is to present information on the shifts in public expenditures, in public income, and in public debts during the early years of the Roosevelt administration, and to discuss the essential principles of a system of just taxation.

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Planning and Civics

American Planning and Civic Annual.—A Record of Recent Civic Advance Including the Proceedings of the Conference on City, Regional, State and National Planning, Held at Cincinnati, Ohio, May 20-22, 1935, and Addresses Selected from the National Conference on State Parks, Held at Skyland, Va., June 18-21, 1935. Edited by Harlean James. American Planning and Civic Association, Union Trust Building, Washington, D. C. 1935. 356 *pp. Illustrated.* $3.00.

Among the many planning and civic subjects covered in this excellent yearbook are national and state parks and forests; protection of wildlife; rural land problems; urban and rural housing and living conditions; rehabilitation of blighted districts; highways and roadsides; county zoning; and planning administration and public support.

Ground Water Resources

A planning report of special interest to persons concerned with the problem of water supply has been published by the Monroe County (N. Y.) Regional Planning Board, under the title of "Ground Water Resources of Monroe County, New York." Among the phases of the subject covered in this mimeographed report of about 200 pages, are Climate, Surface Features, Geology and Water-Bearing Properties of the Rocks, Ground Water, and Chemical Quality of Ground Water in Monroe County. An appendix describes the municipal water supplies of the city of Rochester and of 13 villages and hamlets in Monroe County. The report is available at 50c per copy from the Board's office in Rochester.

Water Supply

Announcement is made by the Sectional Committee (under the American Standards Association) on Specifications for Cast Iron Pipe and Special Castings, that Cornell University has just published Cornell University Engineering Experiment Station Bulletin No. 20 on "Long Versus Short Body Fittings for Water Supply." This bulletin of 102 pages, well illustrated by tables, cuts and photographs, may be obtained from the Director, Engineering Experiment Station, Cornell University, Ithaca, N. Y., at $1.25 a copy.

Smoke

In response to a request made by the General Science Club of teachers in the Pittsburgh high schools for material upon which a course might be based which would give students a rudimentary knowledge of fuels and their use, the Mellon Institute of Industrial Research has published a 20-page booklet entitled "The Municipal Smoke Problem." A copy of this booklet will be sent gratis to interested persons on application to the Mellon Institute at the University of Pittsburgh, Pittsburgh, Pa.

MUD-JACK METHOD

Pedestrian Hazard
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3 inch Sunken
Walk Slab

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• • •
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Corrects Sunken Sidewalk Slab

One of many applications of the Mud-Jack method is the raising of sidewalk slab—the No. 10 N. E. C. MUD-JACK corrected the 3-inch settlement illustrated, in less than TEN MINUTES. Compare this with slab replacement costs. Depressed curb, gutter and street slab is quickly and efficiently raised to the correct grade by this modern economical method.

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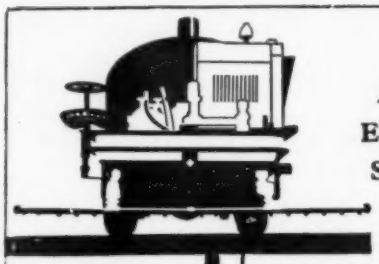

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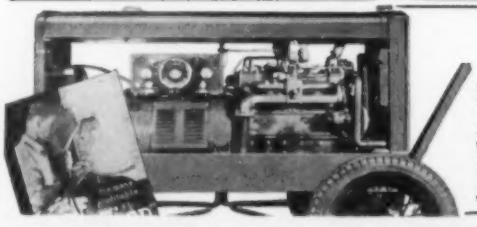

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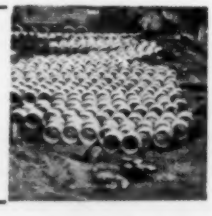

Sound Transmission

The first issue of a copiously illustrated new magazine, *Pick-Ups*, of considerable interest to police departments, air transport companies, broadcasting stations, and others interested in sound transmission, has been published by the Western Electric Co. The introductory editorial states that the magazine will be devoted to "news of developments in the field of sound, and of the organizations and men who use the equipment designed by Bell Telephone Laboratories, manufactured by Western Electric and distributed by Graybar." The editor is Will Whitmore, and the assistant editor is M. M. Beard, both of the Company's headquarters staff at 195 Broadway, New York City.

Housing

The Research and Information Branch of the Housing Division of the Public Works Administration has begun the publication of the "Housing Digest," the first issue of which, dated November, 1935, contains 48 mimeographed pages. The Foreword explains that the "Housing Digest" consists of abstracts of current writings which seem pertinent to the work of the Housing Division staff and of its advisory committees, and that other agencies, organizations, and individuals interested in housing may also find the Digest of use for reference and selection of material applicable to their own problems. (Apply to Housing Division, PWA, Washington, D. C.)

State Planning

As its "First Annual Report of Progress," the New Jersey State Planning Board has published a monograph of 147 pages with numerous illustrations, some material from which will be found on pages 51 and 65 of this issue. $1.00. (Apply to the Board, Trenton, N. J.)

Non-Tax Revenues

"Municipal Revenues from Sources Other Than Taxation," by Edward W. Harding, is the title of Publication No. 35 of the Bureau of Training and Research of the New York State Conference of Mayors and Other Municipal Officials. The research was conducted under the joint auspices of the Conference and of the School of Citizenship and Public Affairs of Syracuse University. The information as to actual practices in the municipalities of the state and nation was secured by means of questionnaires and extensive field trips. This practical and well-organized survey was made possible by the cooperation of municipal officials throughout the country, and should be of great value to all who are struggling with the problems of new sources of municipal revenues. 165 pp., mimeographed. $1.50. (Apply to the Conference at Albany, N. Y.)

The results of an exploration of "the dark continent of fees and other non-tax revenues in Minnesota" have been published as No. 13 of the University of Minnesota Studies in Economics and Business. This 144-page report on "Fees and Other Non-Tax Revenues of Minnesota Local Units," by Arthur M. Borak and Gladys C. Blakey, is available at $1.00 per copy from the University of Minnesota Press, Minneapolis.

Public Recreation

The findings of a comprehensive Recreation Survey of St. Paul, Minn., have been published in a mimeographed report of 214 pages, plus 48 tables. Sponsored by the St. Paul City Planning Board, the study was made by ERA workers under the supervision of George H. Herrold, Managing Director and Engineer of the Board, and edited by Katherine B. Spear. Weight, 3 lbs.; postage required. (Apply to the Board.)

Tax Limitation

An important series of articles on the disastrous effects of drastic real estate tax limitation appears in the November number of the *National Municipal Review*. The situation in West Virginia is discussed by John F. Sly; in Ohio by S. J. Barrick; in Illinois by Simeon E. Leland; in New York by Albert H. Hall; and the general problem by Frederick L. Bird and Jens P. Jensen. (Apply to the National Municipal League, 3.9 E. 34th St., New York.)

Other Reports Received

CHICAGO, ILL.—Proceedings of the Thirty-fourth Meeting of the Chicago Plan Commission, June 21, 1935.

DES MOINES, IOWA.—Annual Report, City Plan and Zoning Commission, 1934-1935. 28 pp.

HACKENSACK, N. J.—General Report of the Municipal Government for two years ending July 17, 1935. 95 pp.

LOS ANGELES, CALIF.—"History—Duties—Organization of the City Department of Social Service," 1932-33-34, Part II, one of a series of papers prepared for the Los Angeles City Government Conference in cooperation with the School of Government, University of Southern California. 37 pp.

"Physician's Handbook," published by the Connecticut State Department of Health. 1935. 52 pp.

"Some Recent References (since 1928) on National and State Planning in the United States," compiled by Harold Merrill, Assistant Executive Officer, National Resources Committee, and James T. Rubey and William H. Heers, U. S. Geological Survey Library. 24 pp.

CONVENTIONS—WHEN AND WHERE

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

DECEMBER 9-12.—MIAMI, FLA. (400)
American Association of State Highway Officials. Annual convention. Executive Secretary, W. C. Markham, 1220 National Press Building, Washington, D. C.

DECEMBER 12-13.—CHICAGO, ILL.
American Society of Planning Officials. Conference on State Planning Administration. Executive Director, Walter H. Blucher, 850 East 58th Street, Chicago, Ill.

DECEMBER 13-14.—NEW ORLEANS, LA.
National Rivers and Harbors Congress. Special meeting. Secretary, Fred D. Beneke, 708 Earle Building, Washtington, D. C.

DECEMBER 14.—NEW YORK.
National Association of Housing Officials. Annual meeting. (Hotel Brevoort.) Secretary, Coleman Woodbury, 850 East 58th Street, Chicago, Ill.

DECEMBER 16.—WASHINGTON, D. C.
American Shore and Beach Preservation Association. Annual meeting. Secretary-Treasurer, Victor Gelineau, 1 Exchange Place, Jersey City, N. J.

DECEMBER 18.—WASHINGTON, D. C.
National Conference on Accident Prevention—called at the request of President Roosevelt by Secretary of Commerce Roper. Acting Director of Activities, Labert St. Clair, Room 5869, Department of Commerce Building, Washington, D. C. (See page 87.)

DECEMBER 26-28.—NEW YORK.
Tax Policy League. Annual meeting. Executive Secretary, Mabel L. Walker, 309 East 34th Street, New York.

DECEMBER 27.—NEW YORK.
American Water Works Association—New York Section. Mid-winter meeting. (Hotel New Yorker.) Secretary-Treasurer, R. K. Blanchard, 50 West 50th Street, New York.

JANUARY 9-11.—WASHINGTON, D. C.
American Engineering Council. Annual meeting. Executive Secretary, Frederick M. Feiker, 744 Jackson Place, Washington, D. C.

JANUARY 13-16.—MIAMI, FLA. (400)
Associated General Contractors of America, Inc. Annual convention. Managing Director, E. J. Harding, 222 Munsey Building, Washington, D. C.

JANUARY 15-17.—NEW YORK.
American Society of Civil Engineers. Annual meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

JANUARY 20-24.—CLEVELAND, OHIO.
American Road Builders' Association. Annual Road Show. Engineer-Director, Charles M. Upham, 938 National Press Building, Washington, D. C.

JANUARY 20-22.—WASHINGTON, D. C. (100)
American Society of Landscape Architects, Inc. Annual meeting. (Hotel Mayflower.) Executive Secretary, Bradford Williams, 9 Park Street, Boston, Mass.

JANUARY 20-24.—LAFAYETTE, IND. (800)
Purdue Road School. Address: Prof. Ben H. Petty, Engineering Extension Department, Purdue University, Lafayette, Ind.

JANUARY 27-31.—CHICAGO, ILL.
American Society of Heating and Ventilating Engineers. Annual meeting. (Palmer House.) Secretary, A. V. Hutchinson, 51 Madison Avenue, New York.

JANUARY 28-31.—NEW YORK.
American Institute of Electrical Engineers. Annual winter convention. National Secretary, H. H. Henline, 33 West 39th Street, New York.

JANUARY 29-31.—COLUMBUS, OHIO.
National Paving Brick Association. Annual meetng. (Deshler-Wallick Hotel.) Managing Director, G. F. Schlesinger, 1245 National Press Building, Washington, D. C.

FEBRUARY 3-8.—COLLEGE STATION, TEXAS. (50)
Texas Water Works Short School. Annual session. Address: V. M. Ehlers, Austin, Texas.

FEBRUARY 6.—RICHMOND, VA.
Virginia State Chamber of Commerce. Annual meeting. Managing Director, LeRoy Hodges, 708 Grace-American Building, Richmond, Va.

FEBRUARY 12-14.—ATLANTIC CITY, N. J.
Association of Highway Officials of North Atlantic States. Annual convention. (Hotel Ambassador.) Secretary-Treasurer, A. Lee Grover, Secretary, State Highway Commission, Trenton, N. J.

FEBRUARY 18-20.—ANN ARBOR, MICH.
Conference on Highway Engineering—University of Michigan. Annual convention. Secretary, R. E. Morrison, University of Michigan, Ann Arbor, Mich.

FEBRUARY 22-27.—ST. LOUIS, MO. (9,000)
National Education Association—Department of Superintendence. Annual convention. Executive Secretary, Sherwood D. Shankland, 1201 16th Street N. W., Washington, D. C.

FEBRUARY 25-27.—CHICAGO, ILL. (350)
American Concrete Institute. Annual convention. (Palmer House.) Secretary, Harvey Whipple, 641 New Center Building, Detroit, Mich.

MARCH 23-25.—LEXINGTON, KY.
American Water Works Association—Kentucky-Tennessee Section. Annual meeting. Executive Secretary, F. C. Dugan, 532 West Main Street, Louisville, Ky.

APRIL 1-3.—HAMILTON, ONT. (350)
American Water Works Association—Canadian Section. Annual meeting. Secretary-Treasurer, Dr. A. E. Berry, Ontario Department of Health, Parliament Buildings, Toronto, 5, Ont.

APRIL 7-9.—LAFAYETTE, IND.
American Water Works Association—Indiana Section. Annual meeting. (Purdue University.) Secretary-Treasurer, J. A. Bruhn, Indianapolis Water Company, Box 855, Indianapolis, Ind.

APRIL 9-10.—EVANSTON, ILL.
American Water Works Association—Illinois Section. Annual convention. Secretary-Treasurer, W. D. Gerber, Room 57, Chemistry Building, Urbana, Ill.

APRIL 17-18.—BUTTE, MONT. (75)
American Water Works Association—Montana Section. Annual meeting. Secretary, Herbert B. Foote, State Board of Health, Helena, Mont.

APRIL 27-30.—WASHINGTON, D. C. (2,500)
Chamber of Commerce of the United States of America. Annual meeting. Secretary, A. D. Skinner, 1615 H Street N. W., Washington, D. C.

APRIL 27.—HARTFORD, CONN.
New England Sewage Works Association. Spring meeting. Secretary, F. W. Gilcreas, State Department of Health, New Scotland Avenue, Albany, N. Y.

MAY 14-16.—ABERDEEN, WASH.
American Water Works Association—Pacific Northwest Section. Annual meeting. Secretary, Ernest C. Willard, 720 Corbett Building, Portland, Ore.

JUNE 8-12.—LOS ANGELES, CALIF.
American Water Works Association. Annual convention. (Hotel Biltmore.) Secretary, Beekman C. Little, 29 West 39th Street, New York.

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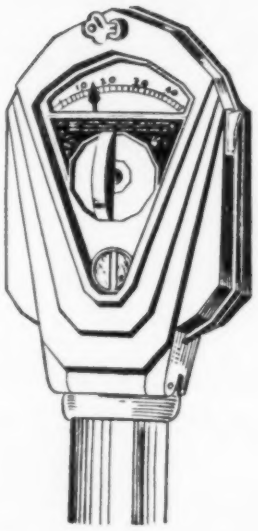
are the answer to your city's parking problem



No longer is the Park-O-Meter an experiment—it is the tried and tested answer to a long felt need for some way to solve the serious parking problem confronting every city in America today. It has proved so popular in Oklahoma City, Oklahoma, that hundreds more will soon be installed. A thousand are now being installed in Dallas, Texas. Scores of other cities from coast to coast are planning to put them in soon.

Is your city keeping step with progress? Has it investigated the tremendous opportunities the Park-O-Meter offers? Parking controlled . . . business greatly improved . . . the city's revenue increased. These are only a few of the many reasons every city needs the Park-O-Meter.

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Commerce Exchange Building Carl C. Magee, *President* Oklahoma City, Oklahoma

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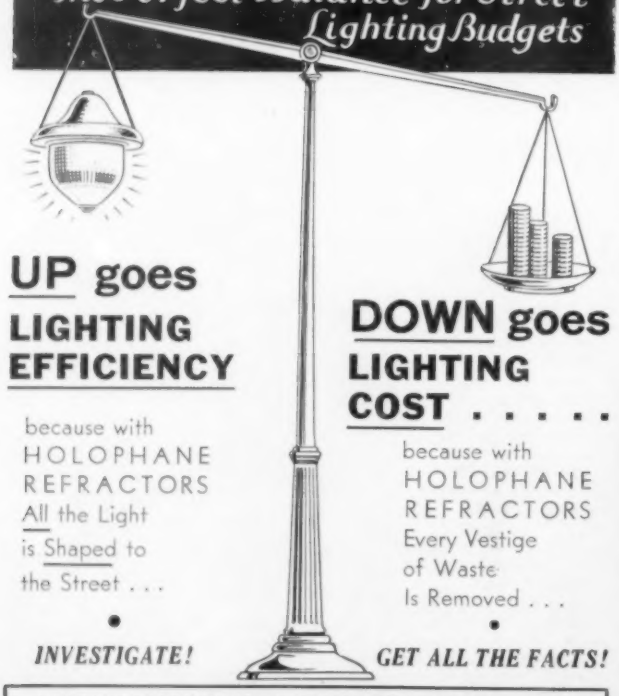
The Perfect Balance for Street Lighting Budgets



UP goes LIGHTING EFFICIENCY

because with HOLOPHANE REFRACTORS All the Light is Shaped to the Street . . .

INVESTIGATE!

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Common Barberry — New Truehedge Columnberry

WHY consider this old time, bygone hedging when you may have Columnberry hedging like this. Both are average two-year-old plants, untrimmed. **INVESTIGATE**—This new hedging can be trimmed to any desired formal shape. Immediate hedge effects obtainable.

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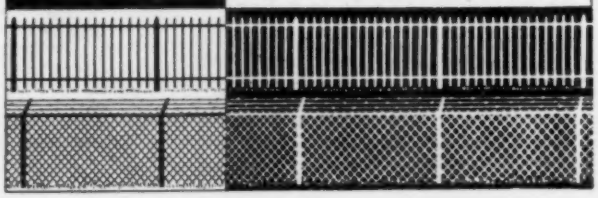


NEWS AND ILLUSTRATIONS

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

Motor-Spray Attachment for Asphalt Kettles

A new motorized attachment which converts any make or size of tar or asphalt kettle into a complete maintenance unit has been announced by Littleford Brothers, 500 East Pearl Street, Cincinnati, Ohio. The cover lifts easily, and automatically locks in place. In order to close the cover, the long spray hose must be detached. This is done purposely, so that laborers using the outfit will remove the hose and drain it to eliminate the danger of overnight clogging.

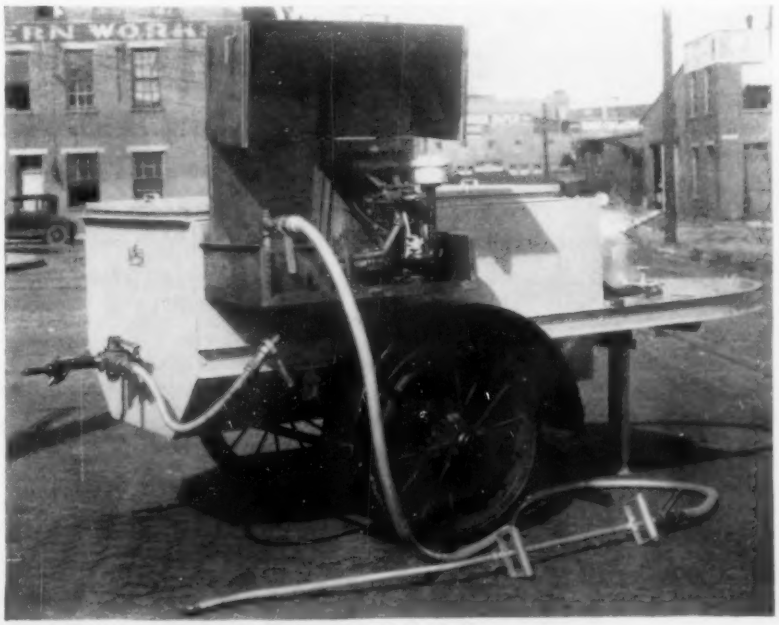
A short flexible metal insulated hose connects the draw-off and the pump suction and can be easily attached and quickly drained. A three-way valve is arranged so that the motor-spray unit will pump material from a storage tank into any other receptacle. It can bypass the material and act as a separate pumping unit, and can also pump material from small commercial drums or from storage tanks, filling the kettle through the pumping unit.

The pumping mechanism is located inside a metal box. Heat from the gasoline engine is exhausted into this box or hood to keep the pump warm, and there is a relief valve in the pump head. The engine, pump and entire assembly are completely enclosed, theft-proof and waterproof when the cover is down. A crank starter replaces the old rope starter. The engine is large enough to take care of two sprays with ⅛-inch nozzles. It drives the pump through an enclosed gear reduction running in oil. A Twin Disc clutch and oil type air cleaner add to the dependability of the motor-spray unit.

Rubber Lining of Pipes Carrying Water-Works Chemicals

The need for rubber lining for a great variety of piping has been recognized for several years. Now a rubber in liquid form, and a rubber in plastic form, are being offered to fulfill the requirements. This new liquid rubber, called "Self-Vulc," has been developed by the Self-Vulcanizing Rubber Co., Inc., Room 520, 605 West Washington Boulevard, Chicago, Ill. It has recently been improved by the development of a new priming compound which makes good results possible by the application of a single priming coat, and both the priming and the liquid rubber can be applied like paint, either brushed on, sprayed on, dipped on, or poured on. The rubber vulcanizes itself when exposed to the air.

Of particular interest to the water-treatment and municipal fields is the fact that these rubber products are impervious to the attacks of all acids except nitric, hydrofluoric and chromic acids. They may be used to line tanks, holding chemicals for softening water and for lining pipes which convey these solutions to points where they are applied to the water. Tanks can be rubberized with Air-Vulc liquid on a single priming coat, and enough coats of the liquid are put on to make up the required thickness; or the plastic may be used to put on any thickness of rubber in a single operation. Not only can tanks be made water- and liquid-tight, but reservoirs which are leaking can be patched or the entire inside surface coated with this waterproof lining.



THE LITTLEFORD MOTOR SPRAY ATTACHMENT

Link-Belt Offices Move

The executive offices of the Link-Belt Co., for many years located at 910 South Michigan Avenue, Chicago, have been moved to the Bell Building, 307 North Michigan Avenue, where they will occupy the entire 23rd floor and the north half of the 21st floor.

Hercules Body Taken Over by Specht

The Hercules body business has been taken over by G. K. Specht, Manager of that division for the past several years, according to a recent announcement. Specht, who has been identified with the industry for many years, assumed control on November 1 and has made arrangements to operate under the name Hercules Body Co., continuing operations for the present in the same location at the West Franklin Street, Evansville, Ind., plant, where the body operations have been carried on for the past few years.

The line of Hercules truck bodies includes about fifty standard models for various makes of trucks, as well as special bodies built for truck manufacturers. The standard bodies are sold nationally through distributors located in all parts of the country.

FWD Appointments

R. H. Schmidt, General Sales Manager of the Four Wheel Drive Auto Co., Clintonville, Wis., has announced the appointment of H. M. Daniels as Supervisor of the new consolidated Eastern Sales Division, and A. F. Waterland as Manager of the new established Philadelphia Branch.

Daniels has been Manager of the New York Branch for over twelve years. Prior to that he was foreign sales representative in China, Java and the Far East. Daniel celebrated the acceptance of his new post with the closing of an order from New York City for twelve hook and ladder trucks and twenty 6-ton capacity combination wrecking and snow-removal trucks.

Waterland has had over ten years successful experience in the foreign and domestic sales of FWD trucks. For eight years he was foreign sales representative in Mexico, Central American countries and England.

INSIST ON GOOD STREET-LIGHTING GLASSWARE

CORRECT PACKING OF GLASSWARE CUTS STREET-LIGHTING COSTS

THE CARTONS that carry your street-lighting globes are a very important item to consider. Good packing means little breakage—little breakage means lower costs. Where street lighting is serviced by trucks, where glassware is stored in warehouses, this prevention of breakage represents a very real saving.

A fine-appearing ornamental globe — Gleason-Tiebout No. 116 light-alabaster rippled

All Gleason-Tiebout glassware is carefully packed. The cartons are of strong, double-faced cardboard. Each globe in the carton is so packed that it will be independently protected from breakage. A little thing, perhaps — this packing — but one of many little things that make Gleason-Tiebout glassware and service so important to those who are interested in holding down street-lighting costs.

Gleason-Tiebout glassware is made to meet the exacting specifications of General Electric engineers. These engineers will be glad to assist you in planning installations that will meet every requirement.

BETTER LIGHT BETTER SIGHT

GLEASON-TIEBOUT GLASS COMPANY

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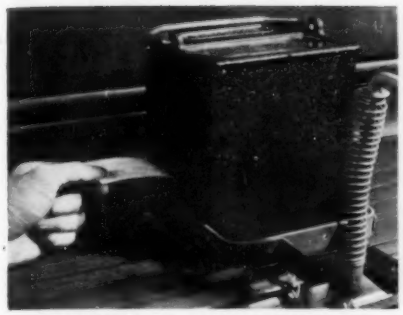
99 COMMERCIAL STREET, BROOKLYN, N. Y.

Why not remember to mention THE AMERICAN CITY?



INSERTING AN INSPECTION CERTIFICATE IN A FRIEDLI-FERAGEN RECORDING DECELEROMETER ATTACHED TO THE RUNNING BOARD OF A MOTOR VEHICLE

A Portable Brake Tester

Defective brakes are the cause of countless minor and many major accidents. Testing of brakes by cities and states is becoming more frequent. A new product, the Friedli-Feragen recording decelerometer, has been announced by the Bendix Products Corporation, South Bend, Ind. This new decelerometer stamps a permanent record in duplicate on a card and is portable, so that it may be easily moved from one car to another. Another feature is its ability to record a "20-mile an hour stop" accurately, although the car may actually be traveling slower or faster than that speed.

The device is small, being 6 x 4 x 7 inches, and it weighs exactly 14 pounds. Its action is automatic, and two readings are made of every stop, one recorded on a certificate and the other on the scale that is on top of the instrument.

In operation the instrument is clamped to the left-hand running-board of the car being tested. The certificate is inserted in the slot, the car is started and the stop is made. The car may be driven at any speed from 5 to 20 miles per hour. The stop should be made with the foot brake only, and as swiftly as possible. The pointer and certificate in duplicate record the stopping distance exactly as if the car had been traveling at 20 miles per hour. The record of the stop is stamped on the duplicate certificate in such a manner that it cannot be erased or defaced. The same test can be made in bad weather by placing the instrument on the floor of the car and having it held securely during the test. The test may be made indoors also if 25 or 30 feet of space is available. The brake inspection certificate is printed in duplicate. It makes recordings for both two- and four-wheel brake cars.

Dump Body Manufacturer Changes Corporate Name

The Marion Steel Body Co., Marion, Ohio, manufacturers of steel dump, garbage collection and commercial bodies for motor trucks and crawler tracks, has announced the change of its corporate name to The Marion Metal Products Co. The offices and management remain the same, the change being made solely to identify the firm more closely with the different products now manufactured.

Water Meters and Pumps Sold on Term-Payment Plan

Worthington Pump & Machinery Corporation, Harrison, N. J., has issued a folder describing its new Term-Payment Purchase Plan, by which the products of the Worthington Pump & Machinery Corporation, and its subsidiaries, the Worthington Co., Inc., Carbondale Machine Corporation, and Worthington-Gamon Meter Co., may be sold to purchasers with satisfactory credit-standing by taking advantage of the liberal provisions of the National Housing Act recently amended for industry and extended to April 1, 1936. This covers purchases up to $50,000 repayment over a period of ten years and low interest rates.

Any property owner, individual, partnership, or corporation with a regular income from salary, commissions, business or other assured source, may apply for loans up to $50,000 for improvements on any one property, and the lending institution must be satisfied that the individual, partnership, or corporation is a reasonable credit risk and in a position to amortize the loan.

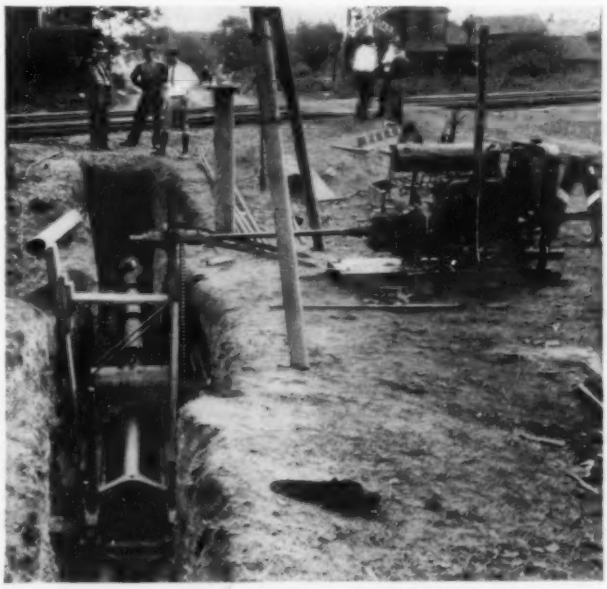
A Horizontal Boring Unit Installs Pipe Under Roads

A horizontal earth boring machine has been developed by the Young Engine Corporation, of Canton, Ohio, for installing casings of 4- to 36-inch diameter for pipe lines, sewers, conduits, etc., under highways, railroads and embankments, without tunneling or tearing up the road bed. In operation, the boring machine is placed in the ditch and braced. It is driven by a gasoline power unit, which is set up on one side of the ditch, power being transmitted through a flexible shaft and chain to the worm-shaft of the boring machine.

On the front end of the pipe or casing being installed is a hard-faced hollow cutter head. The casing is flanged to the hollow driving spindle, which is rotated and is forced by the lever jacks. The cuttings are removed by a spoon on a 1¼-inch pipe, or are washed out by water when obtainable.

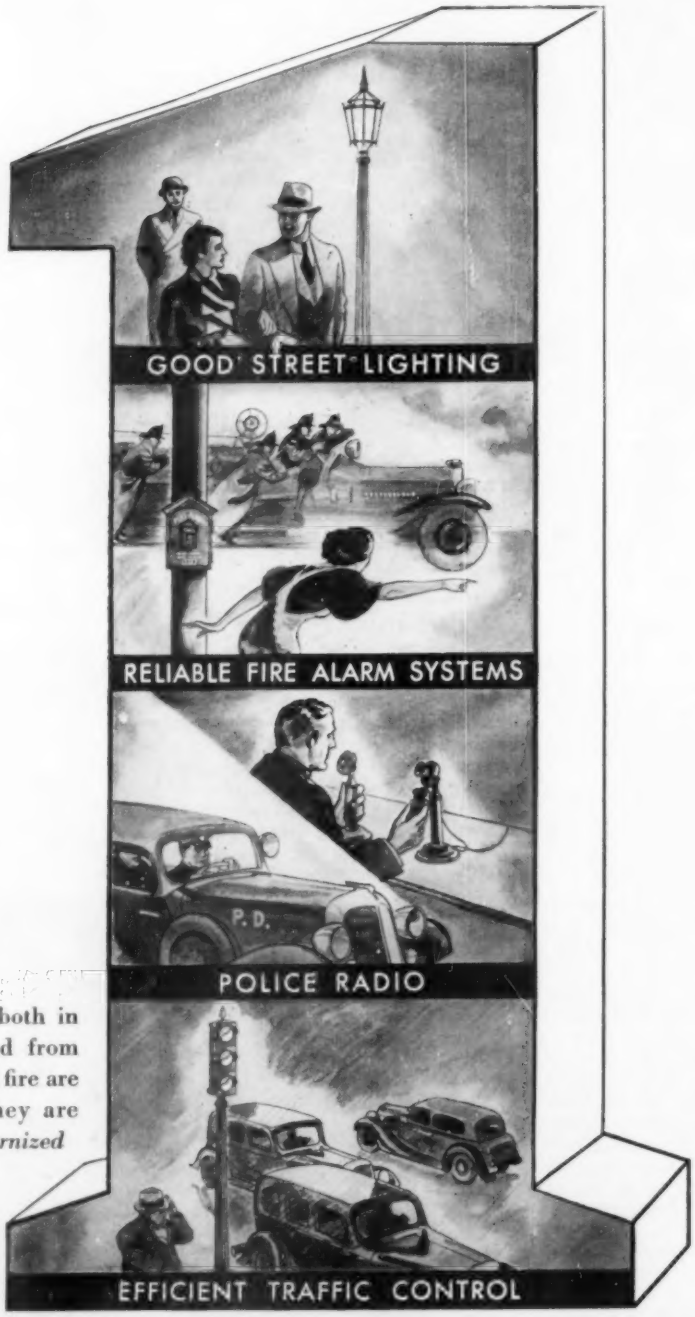
After the casing has entered the embankment about 6 feet, or when the rotating hollow spindle has advanced its full length, the flange of the driving head is unbolted from the casing, and an 8-inch x 5½-foot extension joint with flanged ends is inserted between the casing and the driving head of the boring machine. This cycle of operations is repeated until the casing has advanced 20 feet or more, depending on the length of the casings. All the 8-inch x 5¼-foot flanged extension joints are then removed and another length of casing is welded or screwed onto the preceding joint. These operations are continued until the full length of casing is installed.

For the Annual Index to subjects and places covered in *The American City* during 1935, see the last eight pages of this issue.



THE YOUNG HORIZONTAL BORING MACHINE FOR INSTALLING WATER SERVICES AND PIPES UNDER EMBANKMENTS

The public safety...FIRST!



THE tremendous losses both in life and property suffered from traffic accidents, crime and fire are arousing the public. They are demanding effective, *modernized* protection...electrical protection. Good street lighting, for example. It combats crime...accidents. Boosts business... Reliable and adequate fire alarm equipment...Police radio to speed up the long arm of the law...Efficient traffic control to reduce costly and dangerous traffic congestion...The logical source for this equipment is Graybar. Graybar offers not only a complete line of equipment, but also expert and experienced advice on how to use it most effectively. Write for information.

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Vice-President of Bartlett & Snow Dies

Irwin Sheldon Osborn, Vice-President of the C. O. Bartlett & Snow Co., Cleveland, Ohio, and nationally known as an authority on problems of municipal waste disposal, died on November 2. He joined the C. O. Bartlett & Snow Co. in 1922 after having designed disposal systems in Columbus, Philadelphia, Washington, Chicago and Toronto as a consulting engineer on waste collection and disposal problems. After his connection with the company, he superintended the construction of incinerator plants in Cleveland, Columbus, Montreal, New York, New Orleans, and Birmingham.

Rockwell Completes Coast-to-Coast Tour

Colonel Willard F. Rockwell, President of the Pittsburgh Equitable Meter Co., the Merco Nordstrom Valve Co., of Oakland, Calif., and the Timken Companies, of Detroit, recently completed a trip from coast to coast, visiting the various plants operating under his direction. His optimism over present busines conditions is shown by the fact that expenditures in the various plants which he heads have been authorized to the extent of over a million dollars. The rapidly expanding export business of these several companies has necessitated Colonel Rockwell's visit to South and Central America at this time.

Mickle Directs State Traffic Survey

D. Grant Mickle, head of the Traffic Department of the engineering consulting firm of Jensen, Bowen & Farrell, Ann Arbor, Mich., has recently been retained by the Michigan State Highway Department to direct a state-wide survey of traffic volume, truck weights and sizes, and general road use, on the state and county highway system. Mr. Mickle will also direct an accident survey in Detroit, this being a cooperative project between the Detroit Police Department and the Michigan State Highway Department.

A Reflecting Emergency Road Signal

A portable emergency road signal for the protection of stalled motor vehicles on highways has been announced by the Traffic Equipment Corporation, 557 West 42nd Street, New York. The "Roadflector" is an inverted triangle with brilliant red reflectors visible more than 500 feet when illuminated by auto headlights. These reflector signals do not require the use of matches, batteries or kerosene. They function instantly and positively in any emergency. Each weighs 2 pounds and folds into a space 10 x 10 inches. The laws of many states require trucks and commercial vehicles to carry emergency signals to be placed at the rear, front and side of such vehicles when stalled during darkness.

Hubert Smith, Simplex Sales Manager, Killed in Auto Accident

Hubert B. Smith, Sales Manager of the Simplex Valve & Meter Co., Philadelphia, Pa., and well known among waterworks men, was injured, and died shortly afterwards, in an automobile accident on Sunday, November 10, 1935. Mr. Smith was born in October, 1898. He was graduated from Northeast High School in Philadelphia, and from Lehigh University in 1922. In February, 1923, he became associated with the Simplex Valve & Meter Co., acting as Assistant Engineer in Charge of Inspection and Advertising. In 1925, he became a member of the Sales Department and in March, 1929, was made Sales Manager.

He was a member of St. David's Golf Club, Alpha Tau Omega Fraternity, Northeastern Section Water Works Association, American Water Works Association, and the Pennsylvania Water Works Operators' Association. He leaves a widow, Alta K. Smith, a son, Hubert B., Jr., six years of age, and a daughter, Nancy, ten years of age.

Foulds Made Vice-President in Charge of Permutit Sales

The Permutit Co., of New York, has elected Henry W. Foulds, as Vice-President in Charge of Sales, to correlate and direct all sales, promotion and advertising. Assisting Mr. Foulds will be L. S. Ferguson, Manager of Industrial Sales; O. P. Harris, Manager of Domestic Sales; and H. H. Wilkinson, Advertising Manager. The increase in personnel is due to the rapid increase in sales of this company's water-softening equipment.

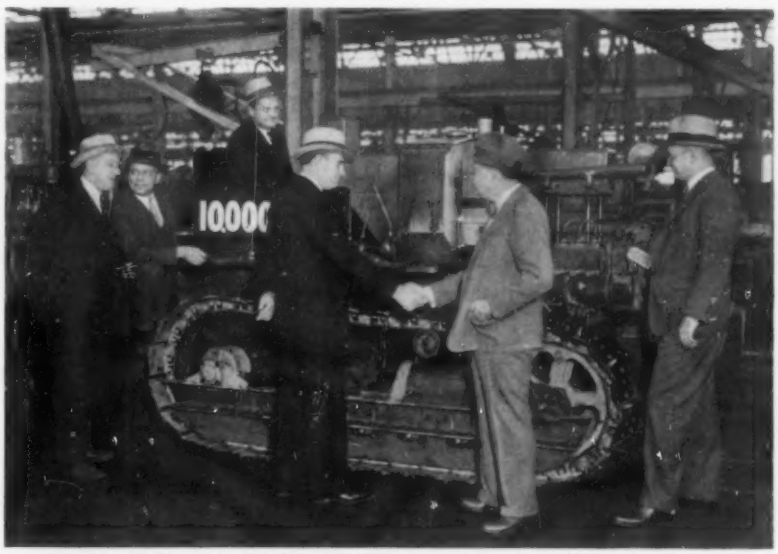
Shifts of Byers Personnel

A. M. Byers Co., Pittsburgh, Pa., has announced the transfer of R. H. Gardner, formerly Division Manager of the Washington office, to Pittsburgh, as Manager of Steel Pipe Sales. Simultaneously, E. L. MacWhorter, formerly Manager of the company's Philadelphia Division, moves to the Munsey Building in Washington, where he will head the combined activities of both divisions now known as the Washington Division. District representatives will be maintained, as in the past, in Baltimore and Philadelphia, the latter address now being 1212 Commercial Trust Building.

City of Creede Installs Diesel

A Cummins KO 6-cylinder diesel engine is being installed at the city of Creede, Colo. This is a small municipality that formerly generated its own power with a water-wheel. As the population grew, there was an increased shortage of electric current.

Creede was also faced with a shortage of water for its generating plant, so they called for proposals for a diesel plant. The Acason-Miller Diesel Sales Co., Denver, Colo., distributors for Cummins engines, made by Cummins Engine Co., Columbus, Ind., obtained the order. The engine is a $6^{3}/_{4}$ x 9-inch unit developing 155 hp at 600 rpm. It is of the four-cycle type, using the Cummins low-pressure fuel injection system. It will drive a 75-kw, 3-phase, 60-cycle, 2,300-volt generator. All the switchboard equipment is manufactured by the General Electric Co. Revenue bonds were issued to cover the payment for the plant.



THE 10,000TH CATERPILLAR DIESEL COMING OFF THE TRACTOR ASSEMBLY LINE

In four years the Caterpillar Tractor Co., first American manufacturer of a diesel tractor, has established a new all-time record for diesel engine production. President B. C. Heacock is shown in the operator's seat. Left to right are: M. J. Gregory; Factory Manager in charge of the foundry; G. M. Walker, Advertising Manager; T. J. Connor, Vice-President in Charge of Manufacture, shaking hands with H. P. Mee, Vice-President in Charge of Sales, and H. S. Eberhard, Chief Engineer

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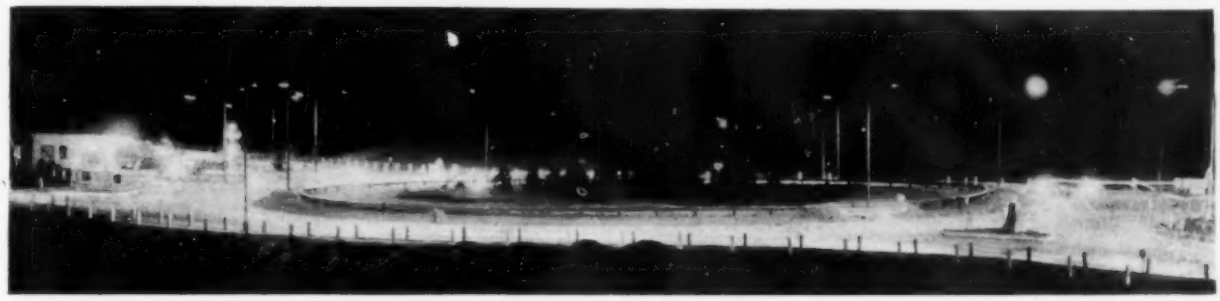


Sodium Lights in Latham Circle, N. Y., Turned On and Off by Daylight

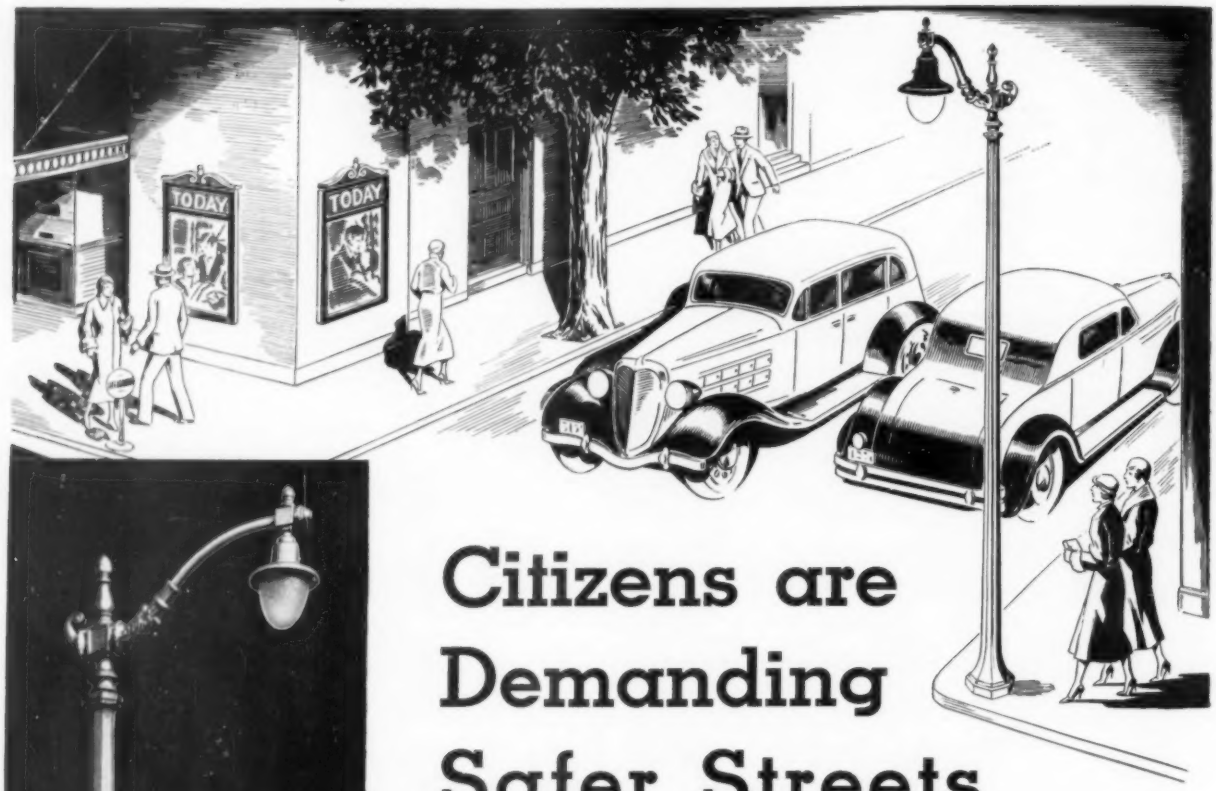
By **DUDLEY M. DIGGS**
Special Representative, Illuminating Laboratory and Lighting Sales, General Electric Co., Schenectady, N. Y.

THE intersection of two main highways—heavy, fast travel in all directions day and night,—possible "death at the crossroads," especially in the dark. This was the traffic situation where the Schenectady-Troy and Albany-Saratoga arteries cross in thickly populated eastern New York—until the State Department of Public Works changed the picture with a traffic circle and a flood of light.

Imagine yourself approaching Latham's Corners at night. You are late for an important engagement and are "stepping on it"—you're in a hurry. So are fifty other motorists who are just then converging at the crossroads from four different directions. But there's no stop-and-go—no sudden pull-up—above all, no fatal disregard by the fellow who glimpsed the situation too late. Instead, hundreds of feet from the intersection, you enter an area of golden-orange light. That is attention-arresting in itself, and it also illuminates a roadside warning of the "approaching traffic circle." The fifty other drivers are having the same

"IMAGINE YOURSELF APPROACHING LATHAM'S CORNERS AT NIGHT"

Voters judge your administration by the good it does



Citizens are Demanding Safer Streets

Street Lighting Should Be an Important Part of Your Safety Program

DON'T neglect street lighting in your safety program—poor street lighting is directly responsible for one quarter of all traffic accidents. In one city of more than a million population, a 35-per-cent cut in street lighting killed 73* additional persons in one year. In another, of half a million population, a 39-per-cent cut in lighting is killing 36* additional persons annually. A city of 60,000 increased its street-lighting budget 13 per cent, and has cut down serious night accidents 39* per cent.

A low automobile-accident record in your city is one of the clearest indications of the progressiveness of your administration. By promoting safety, by enlisting newspaper co-operation, you can turn this into a telling recommendation of the good work you are doing. Don't neglect street lighting. General Electric, Dept. 6N-201, Schenectady, New York.

**Records on which these statements are based will gladly be sent upon request.*

500-125

GENERAL ELECTRIC

experience—they, too, are feeling for the brake pedal.

Then, at safe speed, with every part of the road and traffic ahead as clearly visible as by day, you swing right and into a great circle that is drenched with the same golden-orange. There is no glare, you can't even see the light sources—but you fairly swim in the glow along with the others. You are losing no time; vastly more important, you—and the fifty others—are *safe*. As you emerge from the circle, you realize that one more potential deathtrap has been abolished by the state.

Let's analyze the picture. The first element—the traffic circle—is familiar to most drivers. The other element—which gives distinction to the set-up and safety at night—consists of 31 sodium highway-lighting lamps. Twelve outline the circle, and 19 are on the approaches. These lamps, 25 feet above the concrete and several feet "in" from the road edge, are only 80 feet apart. This gives a uniform, continuous illumination. As has been said, the light source is shielded from the eyes of the driver.

By day, the installation has *character* and decorative value. Ornamental steel arms extend from decorative steel standards. The luminaires are made of Alzak, a high-efficiency, special-process aluminum reflector. The sodium lamps, of the long, tubular type, are mounted horizontally within the luminaire.

The complete installation, designed and engineered by General Electric Co., will be paid for out of Federal funds allotted by the Bureau of Roads to New York State for road-construction purposes.

New Type of Illumination Enhances Park Beauty

ENHANCING the natural beauty of the city park at Ritzville, Wash., mushroom luminaires lighting the flower-beds and surrounding grounds at night have attracted compliments from every visitor. Instead of illuminating the atmosphere above, the light is reflected down, bringing out the unusual beauty of the park, by the special arrangement of the units near the flower beds.

The park is quite heavily set with shade trees which in summer add a special feature of attractiveness when the lights are on, giving the effect of a thickly wooded section. Sixteen luminaires, equipped with 150-watt lamps, are placed to accentuate unusual features of the park. They not only light the grounds without glare but add local spots of color through translucent inverted cone reflectors. The reflectors are mounted on aluminum standards 45 inches above the ground. The units were built by Westinghouse and installed by the Washington Water Power Co.

THIS ILLUMINATION IS EQUALLY EFFECTIVE ON SNOW, AND GIVES YEAR-AROUND INTEREST IN THE PARK

"Admiral's Helmets" Hold Highway Lighting Onto the Pavement

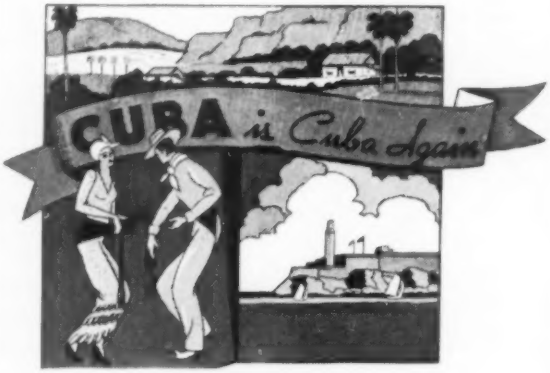
AN exceptionally effective installation of incandescent highway lighting was initiated by Lieutenant Governor H. G. Mosier of Ohio on the night of October 21. Fifteen miles southwest of Cleveland, just west of Chagrin Falls, Ohio, on a 1¼-mile stretch of winding concrete on heavily traveled Route 422, are 39 luminaries shaped like an admiral's hat, mounted 25 feet high, spaced 125 feet apart, and extending 5 feet out over the pavement.

Each unit contains a 400-candlepower lamp shaded by a reflector of Alzak aluminum, a metal which has the highest reflectivity of any except polished silver and, unlike silver, is not tarnished by weather. These luminaires are coordinated to permit light from each to criss-cross and overlap with the lights from its neighbors, without shining into the eyes of a motorist proceeding in any direction.

This Chagrin installation uses incandescent lamps. The big idea is that this system introduces a new technique which puts twice as much of the available light on the highway and increases the visibility three or four times. It backs up results of recent studies which show that safe seeing on highways at night depends not merely on the amount of light, but to a great extent on the direction at which it strikes the road. It is the light which angles toward the approaching motorist that makes the road ahead most visible. Proper application of the new lighting technique will greatly multiply the seeing value of available illumination.

The new system of safety lighting, installed by the General Electric Co. in cooperation with the Ohio Department of Highways, was designed by Kirk M. Reid and H. J. Channon.

MODEL INCANDESCENT LIGHTING ON ROUTE 422, NEAR CHAGRIN FALLS, OHIO



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Under its new policy and regime (with the renowned host, Achille Borgo, as managing director) the hotel will remain open throughout the year. While cuisine and appointments are dominantly French, the Sevilla-Biltmore is hospitably American in its comforts, conveniences and—yes—cocktails. Of course the courteous staff speaks English. An innovation in service is a special department to handle all technical and travel details for its guests—such as attending to luggage and customs inspections, entry of personal cars, arrangements of parties beyond the hotel, tours of the island and any other personal service desired.

It's still the famous Sevilla-Biltmore—tallest building on the Prado, in the heart of Havana's beautiful downtown area—but it has many new attractions to enhance its old charm. With the Sevilla-Biltmore's reopening, Cuba is again *really* Cuba!

ACHILLE BORGO
Managing Director

Constantino Lopez
Assistant Manager

For information, rates, reservations, inquire of any travel agent . . . or address Sevilla-Biltmore Hotel, Havana, Cuba. Cable address: "Sevilla."

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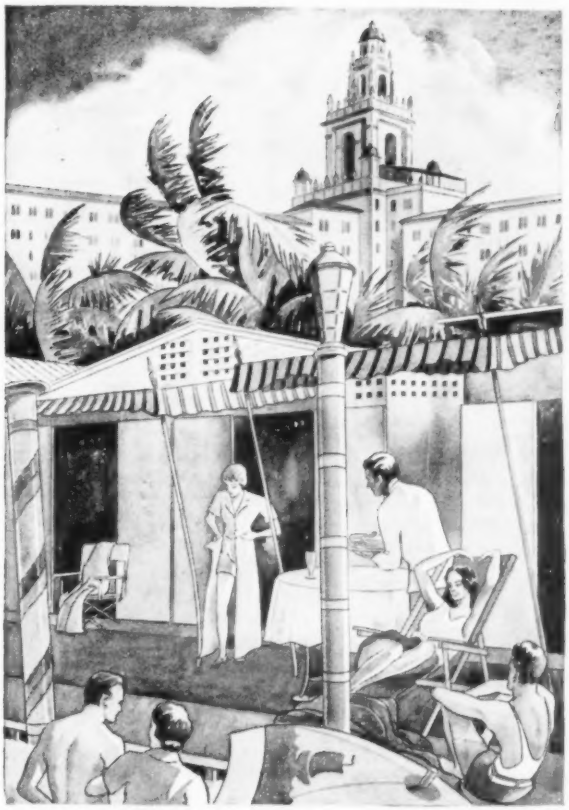

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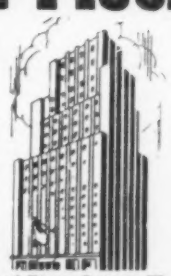
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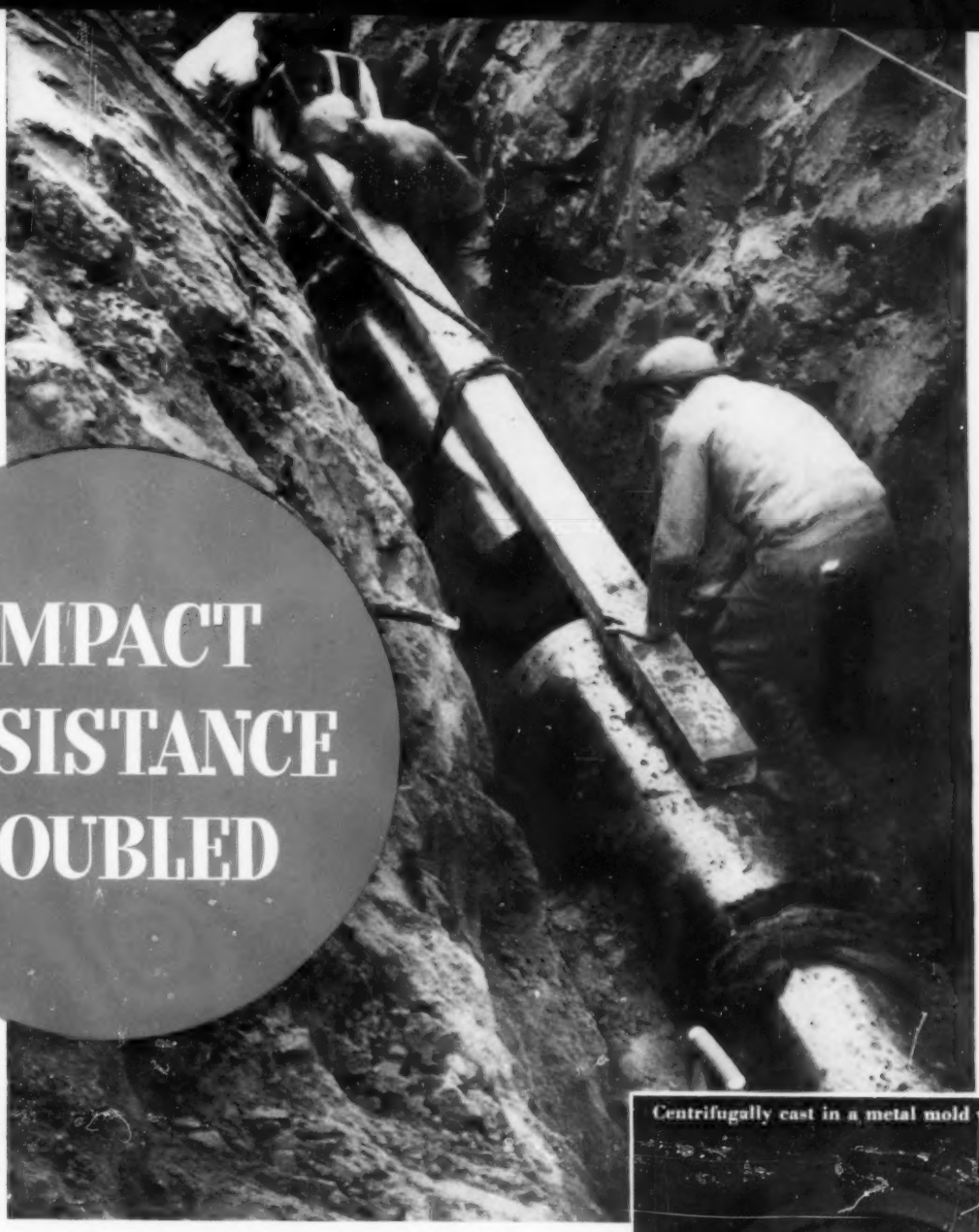

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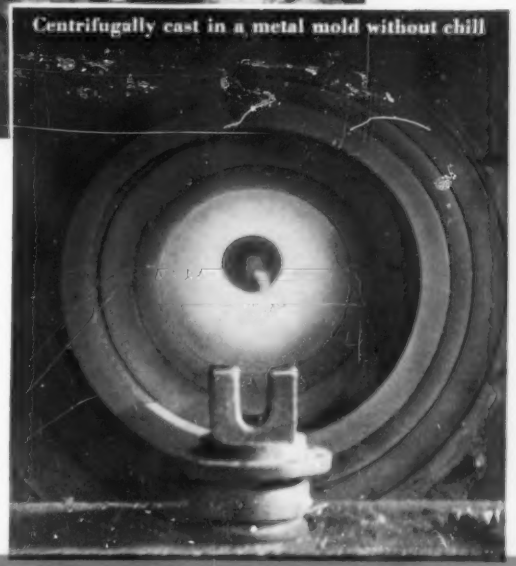

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THE AMERICAN CITY

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Jan. 1936-Dec. 1938

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